The Garden Journal

of The New York Botanical Garden

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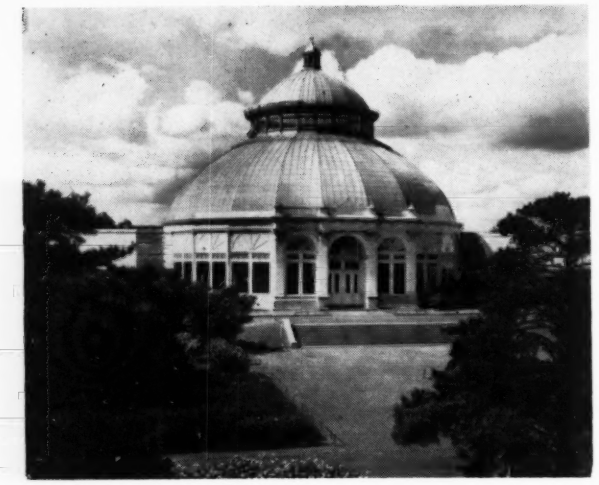

Owing to unforeseen delays in the major reconstruction of the Conservatory, it is regretfully announced that the Indoor Chrysanthemum Show scheduled there has been cancelled. In its stead, a chrysanthemum display has been scheduled for the Museum Building. The opening day of this display is November 7.

DOROTHY EBEL HANSELL
Editor

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Business Manager

THE GARDEN JOURNAL
of The New York Botanical Garden

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AMONG OUR CONTRIBUTORS

J. A. SCHUURMAN is High Commissioner of the Netherlands at Djakarta, Indonesia. While Consul General of the Netherlands in New York City, 1939-42, he became acquainted with The New York Botanical Garden. "As I have been living in Indonesia for almost two and a half years," he recently wrote, "and realize how much of interest here is practically unknown in the United States and other countries, I thought you and your readers might enjoy 'Journey East'." . . . When ANNE E. PERKINS was six years old, she pointed to a plant, one of which few children would notice, and "was told it was *Equisetum arvense (E. hyemale)* or 'gun bright' and that grandfather polished the metal parts of his gun with it." When she was thirteen, someone lent her a Gray's MANUAL OF BOTANY, and "heaven opened, though I had not even a hand lens. I wanted to make botany my life's work, but was sidetracked into medicine." Dr. Perkins, nevertheless, has managed to engage extensively in botanical pursuits. . . . MRS. NATALIA OSSADCHA-JANATA came to America in 1950. In 1951-52, she held a fellowship from the Research Program of the U.S.S.R., under which she was attached to the Herbarium of The New York Botanical Garden. Mrs. Ossadcha-Janata was recently honored by election to full membership in the Ukrainian Academy of Arts and Sciences in the United States. . . . Dr. J. T. P. BYHOUWER has been head of the department of landscape architecture at the Netherlands Graduate School of Agriculture, Wageningen, for some years. The past year he taught at the Rhode Island School of Design in Providence; then departed for his home in Bennekam, Holland, in August. . . . H. J. KOHANKIE is identified with Henry J. Kohankie & Son, Painesville, Ohio, the nursery that has the enviable reputation of having rare and unusual trees and shrubs not ordinarily found in nursery catalogs. . . . FRANK K. BALTHIS is Garden Consultant with Vaughn's Seed Store in Chicago and conducts the garden column in the Chicago Tribune. For seventeen years, he was associated with Garfield Park Conservatory of the Chicago Park System. He is author of PLANTS IN THE HOME, winner of the Macmillan Garden Book Award in 1940. . . . RALPH TOWNSEND, who assumed the duties of Superintendent of the Huntington Botanical Gardens just six years ago this October, was a student gardener at The New York Botanical Garden, 1937-40. He left the Garden to take charge of the Edgar B. Stern Estate at New Orleans, La. . . . DR. DONALD P. ROGERS is Curator of The New York Botanical Garden. At the recent meetings of the American Institute of Biological Sciences at Cornell, he delivered a paper on "Heterothallism and Related Concepts" before members of the Mycological Society of America. . . . Medals, special awards, and other honors have been bestowed upon DR. H. HAROLD HUME, Dean of the College of Agriculture, University of Florida, since 1938. He is known to botanists and gardeners across the country as a contributor to many botanical and horticultural publications, editor of "American Camellia Yearbook," and author of the books AZALEAS; KINDS AND CULTURE, and CAMELLIAS; KINDS AND CULTURE. . . . ADRIENNE (Mrs. C. B) REED is chairman of the New York Unit, Herb Society of America.

CREDIT FOR ILLUSTRATIONS

Front cover, colored illustration of the Christmas Show in the Conservatory of The New York Botanical Garden, December 1951, David Seabrooks; pp. 168, 169, 170, M. G. Schneckenburger — courtesy Buffalo Museum of Science; p. 174, upper, p. 175, lower, pp. 184, 185, J. Horace McFarland Co.; p. 174, lower, Museum of City of New York; p. 175, upper, Gottscho-Schleisner; pp. 176, 177, H. J. Kohankie; pp 178, 179, 180, Huntington Botanical Gardens; p. 182, The Cathedral Age, National Cathedral Assn.; p. 183, left, Redonte; right, Berlese; Back cover, at dusk on a winter's eve on the grounds of The New York Botanical Garden.

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Autumn at last has come! The thicket has shaken
The last lingering leaf down from the naked branch.
They commonly scold the last days of autumn; to me,
My reader and friend, they are dear;
Their beauty is quiet; their modesty brilliant.

PUSHKIN (1799-1827)

Journey East

By J. A. Schuurman

IN July-August 1949, I traveled by train from The Hague, Holland, to Genoa, Italy, and thence by Royal Rotterdam Lloyd M/V. Modjokerto to Java, Indonesia.

Having enjoyed visits to botanic gardens in Canada, Great Britain, the United States, and the Netherlands, I planned to see several more on the way — the first at Berne, Switzerland, delightfully laid out on the steep bank of a stream and, as could be expected, excelling in alpine plants.

Genoa also has a botanic garden; unfortunately, I heard about it long after I had left the place. From Genoa, I intended visiting the gardens at La Mòrtola, Italy, and Monte Carlo, Monaco, but uncertainty about sailing time prevented me from making the rather long journey. I did, however, drive along the Italian Riviera with the Mediterranean summer flora in all its glory, including flowering agaves and fruiting opuntias.

At Cairo, Egypt, the zoological gardens contain a number of interesting plants, but I did not get inside the grounds. Tradition requires one to see the Sphinx — and that took all the time available. Egypt, in places, is greener than I expected, though some of the greenery is exotic — for example, *Casuarina and Eucalyptus*. The indigenous date palm makes a showing even in the barest adobe desert along the Suez Canal, the presence of water apparently being the determinant for its growth.

The next stop was Aden, trim and friendly British territory, where the sea gulls are as black as the barren rocks. A few gardens have been laid out, both on the Crescent (business quarter near the water front) and at Crater (near the water tanks reputedly dating from the time of the Queen of Sheba). These gardens appear to consist almost exclusively of one kind of tree. I was emphatically told, "This tree lilac," but since it was covered with small figs, that seemed hardly the right name, and I assume it belongs to the genus *Ficus*. Two plants common in Aden gardens are *Crinum*, whose clipped leaves looked remarkably fresh in a region almost devoid of precipitation, and a fragrant red-flowering *Nerium*. And that is the whole flora, or at least all that I could see.

Entering the Arabian Sea, the ship passed through a school of sperm whales (not that I noticed any — I would be having lunch, but I was told about it later). Then came several days of monsoon weather during which those passengers who were not ill could watch the flying fishes dart into and out of the waves like so many large locusts.

In the Indian Ocean I suffered two botanical heart-aches: Minicoy and Ceylon, both relentlessly by-passed. Oh Peradeniya! so near, yet so far!

A few days later the ship entered the Straits of Malacca and anchored one evening on the East Coast of Sumatra outside the port of Belawan Deli (properly Pelabuhan Deli). In the greenish water, agitated by a swift current and lit up by the glare of search lights, sea snakes and a few sharks were sighted.

At dawn the ship moved alongside the dock, past fishing craft with brown or turquoise sails; and after breakfast, the passengers were herded into buses to go to the city of Medan (pronounced Maydarn).

During that forty-minute drive I received the full impact of the Indonesian landscape and plantscape. I got off that bus a wiser and happier man. Never before have I been privileged in so short a time to enjoy such novel beauty, such harmonies of color and line, such effects of detail and background. Here the scenery, the vegetation, the buildings, and the people

combined into a new picture wholly pleasing. It was a satisfaction that even this Medan district, which is not considered outstanding, should belie the old wives' tales about the tropics being just a mass of green. In quick succession I saw purple morning-glories, lovely nipa palms growing in marshes, big brackish water ferns, red and yellow tecomas, tall coconut trees, glaucous taros, graceful tapioca plants, luxurious bougainvilleas, enormous rubber trees, fiery lantanas, sweet-scented gardenias and bouvardias, dark evergreens, yellow-flowering cassias, shining sansevierias, pale green banana plants, tall shrubby ixoras, several hibiscus, robust philodendrons, gaunt Kapok trees, coral vine, large-leaved *Ficus lyrata,* blue plumbago, red clerodendron, odd-leaved bauhinias, and a host of other beautiful plants and trees of which I did not even know the names. As the reader will observe, several of the plants mentioned are importations, not natives of Indonesia. Flame tree *(Delonix regia* [Boj] Raf.) and crepe-myrtle *(Lagerstroemia)* were not in flower. There were epiphytes galore. On one tree I counted four kinds of ferns including huge birds-nests *(Asplenium Nidus*) that would fetch first prizes at U. S. horticultural shows. Moreover, in a number of instances, I noted one tree growing as an epiphyte on another tree.

Manggas were absent, but I ate or saw delicious rambutans, mangosteens, papayas, pineapples, coconuts, bananas, pomelos, and tangerines, not to speak of other kinds of fruits I could not identify.

What struck me at Medan was that of a number of trees of the same deciduous species used for street planting, some were in full leaf, others bare, and still others carried colored leaves ready to fall. Apparently, the factors inducing leaf drop were not operating uniformly.

I watched the buffaloes, ponies, and hump-backed Indian cattle and the pageant of races: Malayan, Dutch, Javanese, Chinese, Bengali, Hindoo, Sikh, Tamil and others, all dressed in the costumes peculiar to their particular countries.

The ship had now turned tramp and set course for Malaya. From the deck I could discern the mangroves surrounded by pneumatophores and see fair-sized trees growing luxuriantly in the brackish tide.

We dropped anchor at the island of Penang under a perfect starlit sky, with a tropical thunderstorm raging on the western horizon.

Going ashore next day I had no time to botanize on the hill where *Paphiopedilum barbatum* grows wild, but I did visit the Botanical Garden. "Beware of Monkeys" warns a notice at the entrance. The site is ideal. Land on both sides of a little mountain stream has been laid out as a garden, merging on several sides with the forest. In one part large trees give shade to what is called the Fern Rockery on the bank of the stream. Here I felt as if I were walking in a beautiful greenhouse — minus the greenhouse. Of the numerous well-known plants I shall only mention tree-ferns *(Cyathea), Miconia, Costus, Alocasia, Fittonia, Spathiphyllum, Selaginella, Hymenocallis,* palms, *Philodendron, Scindapsus.*

Instead of glass houses there are lath houses containing marantas, begonias, anthuriums, and other plants, but hardly any orchids. The Japanese "removed" them.

The Sun Rockery contains *Pandanus, Thunbergia,* some orchids, some bulbous plants, cycads, and a collection of succulents. Having read that succulents will not thrive in the humid tropics (except the native Asclepiads — *Hoya* and *Dischidia* — and introduced *Rhipsalis),* I made a list of the succulents growing in the Sun Rockery. Here it is: *Sansevieria cylindrica, Jatropha, Opuntia, Kalanchoe (Bryophyllum) Daigremontiana* and *tubiflora, Yucca, Furcraea, Agave* (with "I love you" carved all over it in Chinese), *Homalocladium platycladum, Euphorbia Tirucalli,* a climbing *Cereus,* a columnar *Cereus* (with remnants of flowers, but an unhappy appearance), a cereoid *Euphorbia* (with the same sad appearance), *Phyllocactus* (which looked as though it was suffering from jaundice) and some stunted aloes. This seems to confirm the opinion that the humid tropics are not the place to grow a succulent collection outdoors. But the limited selection just mentioned, as well as *Pedilanthus,* is grown in gardens all over southeast Asia.

Finally, I followed a path planted with dumb cane *(Dieffenbachia), Jacobinia, Justicia, Acalypha, Ruellia,* and *Hemigraphis,* which led first to a lily pool and then up a hill in the forest area. Now this was the jungle! It was rugged, with boulders and twisted roots, and rather uniformly green, no conspicuous flowers being in evidence at that season. The soil was a yellow loam covered by a sparse undergrowth, mostly of ferns and selaginellas, with one fern *(Gleichenia linearis)* making thickets. I saw few animals; the silence was profound; I was all alone, and yet I was profoundly happy.

People who assert that there are few flowers in the tropics have, perhaps, looked for them in the wrong place — under the canopy of the rain forest.

Back to the road I went, into the sunshine. I seemed to have seen a good replica of the tropical house in The New York Botanical Garden.

I then went to some private dwellings and inspected their front and back yards. People do grow good trees here, such as Frangipani *(Plumeria acutifolia),* an introduction from tropical America with fragrant large white flowers. In their houses they have plants in pots, mostly the rankest *Tagetes, Coleus, Petunia,* and *Begonia semperflorens,* "to remind one of home," and the native *Adiantum.*

From Penang the ship took us to Port Swettenham. From there we drove along a fine road via Klang to Kuala Lumpur, center of the rubber and tin industries. Whole hillsides were covered with ferns, and here and there in the fields I saw clumps of fancy-leaved caladiums.

Kuala Lumpur is a pretty city with substantial buildings and an excellent golf course, from which there is a magnificent view of the range of mountains, covered by solid jungle, that forms the backbone of Malaya from Singapore to the border of Siam. The thirty-six holes are covered with the same broad-leaved grass *(Axonopus compressus)* I had already noticed at Medan and Penang. It makes a perfect turf, the average precipitation being about one hundred inches per annum. The greens consisted of Australian blue-grass, soft, fine and glaucous. The town also boasts of a beautiful city park with good plantings, lath houses, water course, and animals.

During this voyage I evolved — though sometimes disregarded — the perfect answer to the problem "How not to miss seeing the botanical garden." I'll pass it on to you who may some day become a world traveler. By all means see it first, before you get in touch with anybody. If you don't, you'll have a wonderful time sipping cocktails, calling on ladies, "seeing the sights," and accumulating purchases, but you won't see the botanical garden.

At Singapore the second party which we attended the first evening was given by a lady who had a collection of orchids, including what she called the "Zamboanga orchid." This proved to be *Phalaenopsis amabilis*.

Next morning I spent a few unforgettable hours in the Singapore Botanical Garden, which is ninety years old. With its library and large herbarium, it came through the Japanese occupation undamaged, though somewhat neglected. It is situated on heavy clay, so that plants requiring sand or humus can be grown only on soil prepared in advance. Nevertheless, the plant collection is immensely rich, one of the best in Asia. The staff has prepared several interesting manuscripts, but is experiencing great difficulty in having them published.

In addition to the extensive plantings in the open, I saw a number of lath houses, as also some houses consisting of chicken wire thrown over posts of masonry, and one house in which cuttings were being rooted and seeds sown just as in propagating houses in temperate latitudes. But the mixture for seedlings, I found, is coir dust, which is also used as a plunging medium.

The orchid flora of Malaya comprises some eight hundred species. I saw the largest and the smallest orchids native to the country. The largest is, of course, *Grammatophyllum speciosum,* and the smallest looks like a sprig of moss with a pinhead flower, an epiphyte growing on a *Podocarpus*. I regret I can't recall its name. Many orchids are grown outdoors, either in the soil, on blocks, in baskets, in pots, or against *Erythrina* stumps in beds. The potting medium is a mixture of lumps of charcoal and bone with frequent applications of liquid manure.

There is also a good deal of jungle, but lowland jungle, more open, more varied than the hill forest at Penang, and with abundant animal life (song birds, butterflies, monkeys, and wee squirrels).

The problem of keeping succulents in the tropics has been solved here by growing them under glass, where they can be kept dry enough at the roots. However, some of them produce no bloom, and this is attributed to lack of dry air; perhaps the length of day has something to do with it, too, or the absence of dormancy. Stapelias and gasterias were in flower in the glass house. A few large succulents, including *Cereus peruvianus* and arborescent euphorbias, grow in the open.

Here at Singapore I saw *Dischidia* for the first time. I had heard it described as a succulent. Young leaves are somewhat succulent, indeed; old leaves turn into a kind of fleshy bladder admitting the rain through an opening and forming a root inside the bladder. Moreover, these "bladders" are often inhabited by ants but, as with certain other ant plants, there is no evidence of symbiosis.

The ship crossed the equator in the South China Sea (not that I was aware of it — I would be asleep through such an important event) and, after thirty-five days of traveling, docked at Tandjung Periuk, the port of Djakarta.

Larger than Singapore, the city of Djakarta, the Indonesian capital, has three million inhabitants, heavy traffic, and a desperate housing problem. It was then nearing the end of the dry season; the grass was parched, and in the canals constructed by the Dutch the water was low. *Eichhornia* is very common, but as the water in the canals is moved twice a day, it occurs only in small clumps.

Aroids, orchids and the oak-leaf fern occur as epiphytes on the trees in the grounds of the Hotel des Indes. These trees are mostly species of *Ficus* (from which small fruits drop noisily upon parked cars at night) and Saman or rain trees *(Pithecolobium)* which carry flowers and pods at the same time and whose leaflets go to sleep in the evening. Numerous song birds, swallows, and small bats enliven the hotel grounds, and the two common insect-eating lizards are also present (the large and musical tockay—which my wife will call the cockeye — and the small and musical chechac, which clings to ceilings and walls). Birds, plants, and aquarium fish are peddled in the streets; if the word gets around that a person is interested, the peddlers will come to his door with all manner of species. As in many cities, there is also, at the back of a pasar (bazaar, market), a place that serves as the animal mart, where exquisite birds and other animals, caught in the wild, are kept in the heat, on the wrong food, in inadequate cages or tied up, to be sold for money — man's reaction to the wonders of Creation.

The flamboyant or flame tree, *Delonix regia*, a native of Madagascar, has found its way into the Indonesian landscape.

A BOTANICAL FOUNTAIN OF YOUTH

or

Botanizing on the Cattaraugus Indian Reservation

By Anne E. Perkins, M.D.

Above: Golden seal, *Hydrastis canadensis*, in fruit. This is a rare and valuable native plant.

Left: Only one station of *Trillium sessile* is known in New York.

For over twenty-five years I was on the staff of the State Hospital at Collins, New York, for many years in charge of the women's department. Botany has always been one of my avocations, ornithology another. While at the hospital, I spent all the spare time that I could in the early morning on the adjoining reservation. I knew many of the Indians, who would tell me of the uses to which they put plants.

In Zenkert's Flora of the Niagara Region, published by the Buffalo Museum of Science, you may read about my collections. I sent a great deal to Dr. Homer D. House but collected much more extensively for Cornell, as Albany is primarily interested in New York plants. At Cornell are my Puerto Rican collections, named by Dr. N. L. Britton (who heard I was in Puerto Rico and came to see me); also, my extensive Florida, Texas, Maine, Alaska, and Mexico collections.

When I sent *Astragalus glycyphyllos* to Cornell as a probable western species, it could not be found in any botany and Dr. House put it on the list of plants received from me as "unknown legume." Wiegand finally located it in a foreign botany. Several years ago the U. S. Department of Interior wrote to Dr. Zenkert about seeing this account and he referred the Department to me. As the plant was very rare, the Department wanted to know the exact location in order to collect both flowers and fruit, so I took two people to the location. The Department secured abundant specimens. By the way, *Astragalus glycyphyllos* is far from "sweet-leaved" — it has a very unpleasant odor!

I also sent *Astragalus glycyphyllos* to Dr. Britton, as I recall, and to Dr. Fernald, though the latter did not mention this station. He helped John C. Parlin to get a start. What a man he was! I knew him many years — and to the end of his life Parlin could name anything on sight, though he turned more to mosses and lichens. Other collections went to Gray's Herbarium and Portland Museum. I was fortunate in finding good plants in southwest Maine — I used to write up Maine plants for "Rhodora."

I spent days in the field with the late Dr. Rodney H. True and the late Dr. Arthur H. Norton, for many years curator of the Portland Museum. He sent Dr. Gordon Dunthorne to me, to have me guide him while taking kodachromes of rares plants in southwestern Maine.

I have been so fortunate in knowing many distinguished botanists. Alas! most are now resting in the cemetery.

Dr. Ezra Brainerd was a good friend and so was Dr. Milton Baxter.

I was active for years after my retirement — for nineteen winters I collected material in Florida for Cornell. After Dr. Karl M. Weigand's death and Dr. Stewart H. Burnham's, I stopped. Dr. H. H. Rusby and I spent many days botanizing in Florida — with all his experience and knowledge, Florida was new and I could help. He sent for me a few hours before his death to say he was going; except for the family, I was the last to see him. Dr. Rusby was a fine character.

I am now in my eightieth year — a veteran. Recently, I presented a paper before the Josselyn Botanical Society of Maine, and at the suggestion of Dr. F. H. Steinmetz (Professor of Botany, University of Maine) and Dr. E. C. Ogden (New York State Botanist), I prepared the paper for publication. Here it is:

In these days when so many rare flowers are well-nigh exterminated by the facility with which they can be reached by automobile, it is fortunate that there are haunts still known only to the few, where treasures can be found.

In many years of botanizing in the western part of New York State, it has been my good fortune to discover some plants not known to the section previously, or very rare, while others were relatively scarce.

To a teacher belongs the honor of calling the attention of Dr. House, then New York State Botanist, to a trillium not described in his beautiful book, WILD FLOWERS OF NEW YORK. Owing to the importance of this station, the secret is being kept by a few. The species proved to be *Trillium sessile,* not known elsewhere in the state.

The Cattaraugus Indian Reservation offers one of the finest botanical fields in the state and here I found one of the most spectacular finds of my experience — an European astragalus or loco-weed, *Astragalus glycyphyllos,* not then known elsewhere in the country, but years ago reported transiently at Back Bay, Boston, and Communipaw, New Jersey. Yet here it covers perhaps half an acre, sprawling over the ground where land has not been cultivated, a mile from habitation and where the banks of the creek are seven feet high. Whence did it come? The only clue to its introduction cannot be established, namely, that it seems to radiate from a point where formerly carcasses of animals were dumped. In Gowanda there is a tannery, from which waste may have drifted up the creek, as hides were imported. Another native, but rare astragalus grows near by.

A very rare plant is golden seal, *Hydrastis canadensis.* This is scarce, costly, and so valuable in medicine that it has been practically destroyed.

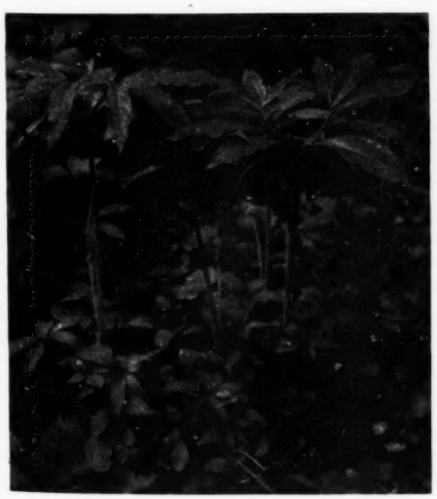
The Indians gather for sale and use in domestic medicine many plants and shrubs and have almost exterminated the ginseng, *Panax quinquefolium.* They collect extensively the Wahoo or burning-bush, *Euonymus atropurpureus,* to sell to a patent medicine concern, thus uprooting whole thickets. In fruit it is a strikingly beautiful shrub, closely related to our bittersweet, *Celastrus scandens.*

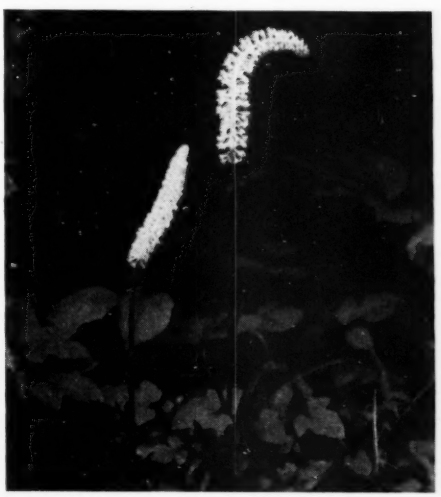
The devil's bit, *Chamaelirium luteum,* in the Lily family, is uncommon and very unusual in appearance, with long white spikes, often bending over. The white clintonia, *Clintonia umbellata,* is rare, but entering New York from Pennsylvania. This is a far prettier plant than our greenish yellow *Clintonia borealis.*

A most thrilling find was a good-sized colony of Hooker's orchid, *Habenaria Hookeri,* for over thirty years unknown to that part of the state. Later, other stations were discovered on the Cattaraugus Reservation.

The only station in the county for the orchid, *Corallorrhiza,* the small or autumn coral-root, is on the Reservation. This is not attractive, merely a tiny, inconspicuous, light brown madder-purple plant, slender, with no green foliage and with toothed, coral-like, underground rootless stems. It is temperamental and, though untouched, may not come up in the same place, but be absent a year or found rods away. Some botanists have never seen it growing.

One plant, abundant in wet woods off the alluvial flats of the Cattaraugus Creek on the Indian Reservation, always brought forth a gasp of surprise from visiting botanists, namely, the very rare green violet, *Hybanthus concolor.* This, while in the Violet family





Above: The devil's bit, *Chamaelirium luteum,* is another rare native in western New York.

Left: The green dragon, *Arisaema Dracontium,* is an uncommon member of the interesting Niagara frontier flora.

Right: Hooker's orchid, *Habenaria Hookeri,* was lost for over thirty years to the section in New York where it was discovered.

and with its general structure, is not at any time noticeable nor attractive, though most of the uninitiated expect to see a green violet. This station is considered extraordinary, but plants do not lend themselves kindly to a photograph.

Mountain water-cress, *Cardamine rotundifolia,* was noted many years ago by Peck, the State Botanist, as occurring in cool, shaded springs in Carrolton, New York, and this is one of the two stations specified in Gray's MANUAL OF BOTANY. It is in the Mustard family, grows in water or very wet places, sending out runners with little roundish, heart-shaped leaves and pretty white flowers. Several stations were discovered for this mountain cress, and in considerable abundance, but the slender fruit pods do not show.

A plant often seen in our gardens, Greek valerian, *Polemonium reptans,* a beautiful blue, with pinnate leaves, is very abundant along Cattaraugus Creek, though scarce elsewhere.

In close association are the elsewhere rare white adder's tongue, *Erythronium album,* delicately fragrant; the common yellow one; and the most beautiful and artistic Virginia cowslip or bluebell, *Mertensia virginica,* with its indescribable blue and contrasting pink buds. Huge beds of this, "as if the sky had fallen," one beholder said, continue in spite of wholesale picking for sale by the Indians. This plant and the polemonium transplant with ease and spread amazingly.

Indians collect the Wahoo, *Euonymus atropurpureus,* for use in patent medicine.

The tall white spikes of *Cimicifuga racemosa* line the banks of the Cattaraugus; the flats are covered with two species of leafcup, *Polymnia Uvedalia* and *canadensis,* elsewhere notably rare; two species of *Agastache,* the giant hyssop, elsewhere rare; *Heliopsis helianthoides; Campanula americana; Alliaria;* and wild onion, dug by the Indians and eaten as salad.

In the rich low ground and bogs are many beautiful specimens of the showy lady-slipper, *Cypripedium Reginae,* alas! collected by hundreds for sale by the Indians in Buffalo and Jamestown — and latterly people have unwisely encouraged them in selling roots, which seldom survive the second year. Here also are *Cypripedium acaule,* and the large and small yellow lady-slippers, called by the Indians whip-poor-will's shoes. Both the species of *Microstylis,* small rare orchids, have been collected here, and the showy orchid is abundant.

The woods are white with dogwood in its season, the air fragrant with azalea and crab-apple. Bittersweet, *Celastrus scandens,* is at its finest and in spring there is an unbelievably dense carpet of countless white trilliums *(T. grandiflorum).* Among good plants are: *Euphorbia corollata, Angelica villosa,* giant *Lobelia, Houstonia ciliolata* (fringed bluets), *Lycopsis arvensis* (small bugloss), *Thaspium barbinode* (the golden Alexander), *Hypericum Ascyron* (giant St. John's wort). Hercules' club or Angelica tree, *Aralia spinosa,* occurs as a native on the Reservation and where the In-

(Continued on page 188)

The white-flowered *Clintonia, C. umbellata,* is finding its way into New York from Pennsylvania.

Herbs—

in Ukrainian Folk Medicine

PART I

***By* N. Ossadcha-Janata**

Mrs. Natalia Ossadcha-Janata is a long-time student of the plants used in folk medicine in the Ukraine. One of her first botanical assignments was the preparation of a botanical dictionary for the Ukrainian Academy of Sciences. For the next fifteen years she studied the distribution of medicinal plants in the Ukraine and their applications in folk medicine. In the course of these studies she led a number of expeditions into the most rural districts of the country, seeking out the village practitioners who were keeping alive the folk lore about plants and their uses. During the course of these expeditions, which were conducted in behalf of various agencies, such as the Ukrainian Institute for Applied Botany, the All-Ukrainian Institute for Experimental Medicine, and the Ukrainian Institute for Experimental Pharmacy, she amassed a quantity of original data on a subject that is gradually losing ground, so that much of her data is no longer replaceable. She investigated the folk practices in one hundred forty-four different villages during the period.

Mrs. Ossadcha-Janata took her thick manuscript with her as her most prized possession, when she had to flee the Ukraine during World War II. From 1943 to 1950 she wandered first to Poland, then Czechoslovakia, Austria, and Germany. After the war she served as Welfare Officer for the Ettlingen Camp, in Germany, for the International Refugee Organization.

The following article is an excerpt from her dissertation that she managed to save through her wanderings.

DAVID D. KECK

NATURE was the first teacher of the medical art; instinct and chance were guiding its first steps and comparative reasoning did the rest." (Tschirch.)

The use of medicinal herbs is closely linked with the development of empirical folk medicine. So-called folk medicine actually comprises the empirical knowledge accumulated in the course of centuries which, at the same time, is closely interwoven with mystical and religious conceptions, customs, and superstitions.

In his search for means of curing a disease, primitive man was guided by instinct and chance toward various herbs. Furthermore, he observed the behavior of animals and birds which were using different herbs in order to provoke vomiting and diarrhea. Having observed that the consumption of certain herbs led to positive results, he started using them. Certain treatments that man had adopted from birds and animals are still in use (for instance, the use of an enema as applied by the ibis).

Prehistoric man could already distinguish between useful and harmful plants. Useful plants were those employed for human and animal consumption, for producing textiles, oil, dyes, and medicinal herbs; harmful plants were poisonous herbs and weeds.

Knowledge concerning the useful qualities of plants and, in particular, medicinal herbs — a knowledge acquired by man through experience and observation — was transmitted by word of mouth from generation to generation. This empirical knowledge has been steadily widened and improved by theoretical reasoning and practical experience and has eventually developed into the medical art as we know it today.

Empirical folk medicine based on everyday observation of man and beast already existed at a time when man did not yet know religion. In the history of all peoples there have been periods when the knowledge of herbs and their practical use were strictly family secrets handed down from generation to generation, until they eventually became the property of priests, sorcerers, magicians, and shamans.

Primitive man learned how to employ for medicinal purposes herbs which he considered useful on the basis of experience and observation, but he never questioned how the treatment affected the organism or what was the cause of the disease. This simple attitude of primitive man toward curing disease is quite similar to the instinctive behavior of animals in case of sickness, and may be called the *empirical phase* of medicine.

Observing day after day certain symptoms of illness and disease, primitive man realized the link between cause and effect; he knew, for example, that a wound caused loss of blood, or that certain parasites caused painful symptoms. However, as a rule, he did not realize or understand the cause of illness. He explained the processes in the human body as produced by the same factors which brought about any kind of natural phenomenon such as the seasons of the year, sunrise and sunset, the moon phases, thunder and lightning! Unable to grasp the real causes, man thought that these phenomena as well as sickness and disease were subject to the will of some unknown being. This being might be human or superhuman — a spirit or a demon. Consequently, illness was caused either by some evil spell effective at a distance or by an evil spirit entering the body of the sick man in the form of a worm or stone, for instance. This was the so-called *demonic phasé* of medicine.

In view of such a conception concerning the origin of diseases, man either had to placate the person who wished him harm or to expel the demon which had entered his body in

order to regain his health. For this purpose, he offered gifts and conjured the evil spirits by invocation and magic. At the same time, he continued to make use of the old empirical methods. He would, for instance, swallow some talisman containing certain medicines (emetics) or whip himself with nettles (urtication) in order to expel the sickness. Excavations have given clear evidence that primitive man even carried out skull trepanations in cases of epilepsy, in order to expel the "evil spirit" that had penetrated into the sick man's skull. Sometimes the patients even recovered from such operations. A comparison with present-day attempts to treat epilepsy also by brain surgery shows clearly how highly developed folk medicine was even in those prehistoric times.

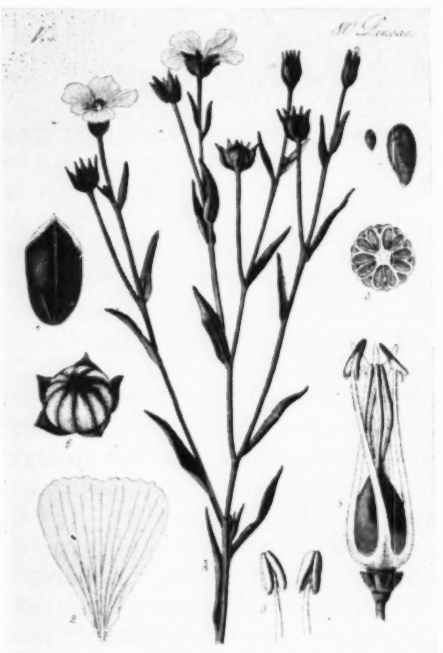
Bitter medicines, which in times past were taken as a means of expelling evil spirits, are still known in present-day medicine under the name of "amara," as one of the remaining empirical methods of treatment.

At that phase of development, the medical treatment of the sick was no longer confined to the family circle but gradually became the function and privilege of the temple and the "medicine-man" — the priests of the temple. Up to the sixth to fifth century B.C., the priests were also the medical men and medical treatment was given in the temple. It is only since the time of the Greek physician Hippocrates (466-377 B.C.) that medicine freed itself from religious influence and was taken over by laymen.

The mysterious rites and ceremonies which the priests performed with medical treatment gradually penetrated into the masses of the population and eventually became the prerogative of the village quacks and healers. These medical wizards could understand and interpret "the rustle and murmur of the herbs," they knew where to find "good and evil herbs," how to brew an appropriate infusion for each particular case, and how to strengthen the effect of an exorcism and a magic spell by a special herb.

The profession of the village quack was held in high esteem, particularly in culturally advanced countries. The village quack still plays an important part in the life of the wide masses of the population. He is usually a person without any medical or scientific training, who is reared in the traditions of so-called folk medicine, generally by word of mouth.

Each people developed its own methods of medical treatment, making use mainly of the medicinal herbs of the local flora. Later, with the development of trade and a growing network of land and sea communications, the people living along the shores of the Mediterranean began to exchange commodities with other people, including medicinal herbs and aromatic plants, thus increasing the number of available herbs.



The annual flax, *Linum usitatissimum*, one of the earliest cultivated plants, was used as food, for cloth, and for medicine as far back as 4000 B.C.

The origin of medicine, and thus also of the use of herbs, is lost in prehistoric times. The sources on which we base our knowledge of the history of the use of herbs are: the inscriptions and pictures on the walls of the Egyptian temples; papyrus scrolls (among which the most important are the Prisse papyrus written during the first half of the third millenium B.C., and the Ebers papyrus written about 1550 B.C.); and the "Nineveh Library" written on clay tablets in Babylon (668-628 B.C.). Other sources include the Babylonian and Assyrian cuneiform writings, fragments of herbs and plants placed on plates or in jars in ancient tombs as sacrificial offerings or as food for the dead, drawings of plants on the walls of tombs, on temples and vases, and as decoration on mummies.

The oldest data on the use of medicinal herbs and other useful plants were found in the early human settlements and lake-dwellings in Germany, Austria, Italy, and, in particular, Switzerland, which date back to the early period of the stone age (approximately 3000 B.C.) and partly of the bronze age (2000 B.C.), where remnants of various plants were discovered.

Since the appearance of written language, medicinal herbs have been mentioned in the writings of historians and poets, and in books on plants as well as in books on medicine.

In lake-dwellings fragments of cultivated plants, as well as of certain medicinal herbs, have been found. Among them are *Panicum miliaceum, Setaria glauca, Papaver somniferum* var. *setigerum, Pyrus, Linum austriacum, Pisum, and Ervum.* The lake-dwellers used as a purgative *Chenopodium album,* and as dyes *Reseda Luteola* (which they possibly cultivated) and the seeds of *Sambucus Ebulus.* The peoples of western Germany in this early period used as abortion-inducing medicine *Claviceps purpurea* (which is still used for medical purposes).

Prehistoric man of the stone age (3000 B.C.) cultivated certain food plants, such as *Triticum vulgare, Hordeum vulgare,* and *Panicum miliaceum.* One of the earliest cultivated plants is *Linum usitatissimum* (over 4000 B.C.) which was used as food, for medical purposes, and for the weaving of cloth. According to Tschirch, it was extensively cultivated in the Nile Valley in 2300 B.C., and the discovery of fibers and capsules of *Linum usitatissimum* forma *humile* (annual flax) confirms the idea that this plant was cultivated in 3359 B.C. A cultivated form of *Linum angustifolium* (an ancient variety of the northern flax) was found in the lake-dwellings in Switzerland, which date from the early period of the stone age.

The inscriptions on the walls of Egyptian temples indicate that the fol-

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Plants for the Little Conservatory

By **Frank K. Balthis**

THE home gardener who can boast of enjoying a home conservatory is fortunate indeed, for he can give vent to his desire to grow things, both common and unusual. He can, if he desires, concentrate on those that do best in the cool, the intermediate, or hot house. He will have far greater success if he devotes his energy to only one of the three groups — but who does that?

He longs to grow a few orchids; and he may do so if he is careful in his selection, for all orchids will not do well under the same conditions. He may be interested in the development of a certain group of plants such as the begonia, African violet, rose, geranium, and give attention to crossing or hybridizing. He may want some flowers at all times, or he may be content to enjoy well-grown ornamental foliage plants of which there are many different kinds. There are so many avenues down which the enthusiast can pass in a highly enjoyable manner.

It stands to horticultural reason that a conservatory needs to be kept in the height of cleanliness to reduce the invasion of insects or diseases. The indoor gardener must also be aware that plants in great variety will not succeed under the same general atmospheric conditions. Experience, plus the study of his plants' requirements will, in time, increase his knowledge to such an extent that he will do the right thing at the right time. A knowledge of watering is an outstanding asset in the attainment of perfect growth. So, also, is the knowledge of what is the right soil for each group. Some succeed in a super-abundance of humus, or a very light, moisture-holding mixture; others find a comparatively heavy soil more congenial; still others, like the cacti, are at home in a super-sandy, highly-drained soil.

Bulbous plants are always of interest in their season and must be included in the scheme of ornamentation and utility. For growing in pots, the delicate achimene, with its blue, pink, or white flowers, is pleasing and different. Other out-of-the-ordinary conservatory subjects are *Eucharis grandiflora,* with delightfully fragrant, white blossoms; the glory-lily *(Gloriosa Rothschildiana),* a tall climber with crimson-tipped, yellowish ivory blooms of rare quality; the showy *Isoloma,* tuberous-rooted and interesting to the hybridist; the common, yet so alluring because of its fragrant, numerous blooms on a tall stalk, tuberose. It can be easily grown in pots to sweeten up the home or be lined out in a sunny place for cutting during the summer. The zephyr-lily *(Zephyranthes candida)* with white, rose-tinged blooms, may be grown in pots, and devils-tongue *(Hydrosme Rivieri)* with its huge calla-like flowers, ill-smelling and yet with foliage highly attractive and very useful for outdoor summer display, may even be tried by the ardent plant lover in his conservatory. It never fails to excite the visitor.

The common bulbous plants—tulip, narcissus, hyacinth, and the host of smaller representatives such as the crocus — are most important for conservatory growing. The colorful tulips never fail to appeal, but to grow them successfully requires that the bulbs be started in a cool, dark place for rooting. Narcissi, in most cases, also require the same method to bring them to satisfactory flowering. The gardener, if he wishes, may set his flats on a piece of open ground outdoors, put a thin cover of sand, buckwheat hulls or similar material over them, and a foot of soil over all, and the bulbs should start sending out roots almost immediately. In a relatively short time, flower stalks will push upward and before the gardener is aware of it, the bulbs will be in prime condition for taking to the light of the conservatory. Pot bulbs, in low pans, may be given the same general care.

Everyone exclaims when he sees a well-grown hyacinth in flower, and rightly so for it is one of the old-time favorites. Differing from the tulip and narcissus, the hyacinth can be easily separated from its neighbor with roots intact and carefully placed individually in a four-to-five-inch pot, depending on the size of the bulb, for future flowering. Sphagnum moss may be used as a substitute for soil, for it is light and clean and holds moisture which the bulb must have to develop its flower stalk to its maximum length and beauty. Several bulbs, started in this way, can be transferred to a special container for better display.

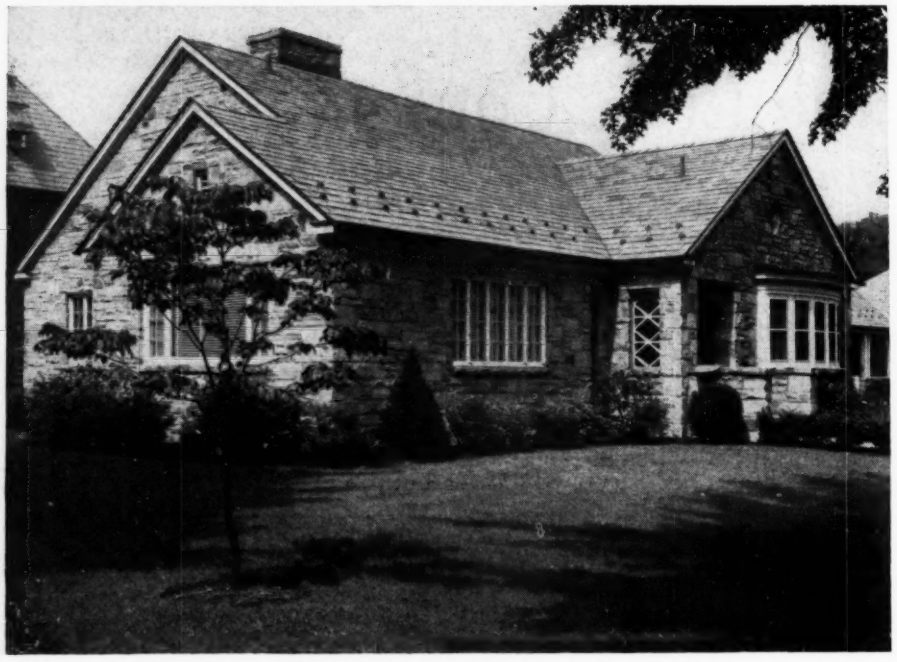
A bulbous plant that deserves special mention is the amaryllis, one of the floral beauties for the conservatory or for the home, and easily grown. It likes a soil consisting of two-thirds rich garden loam, one-third leafmold or peat, and a bit of sand. It can be started anytime from January to April and does best in a 55° to 65° temperature. A pure white variety has been offered within the last few years.

Highly colored, rare, or unusual foliage plants find a welcome in conservatories. The fancy-leaved caladium, one of the most outstanding, is grown for summer display. It comes from the shady, moist, tropical forest and revels in a moist humus soil. In early spring, the tubers are started in sand in the bench or in flats and within three weeks should be ready for potting. If several are planted in a fairly large pot, one variety to a pot, kept well watered and given an occasional dressing with fertilizer, the matured leaves will present a never-to-be-forgotten array of color. Liquid manure is the best food and should be applied as soon as the root system is reasonably well established. A high temperature should be maintained and the house shaded to avoid the intense rays of sun during the long summer days.

(Continued on page 186)

THE HOME COMO

By Jan T. P. Byhouwer



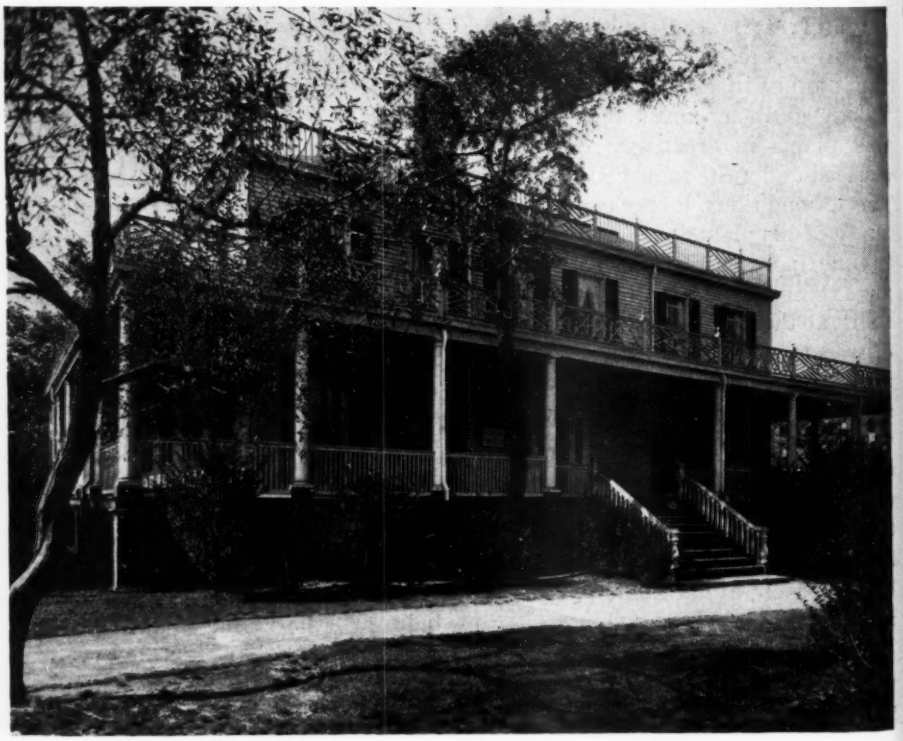
Restrained foundation planting is practised around today's home.

ONLY a comparatively short while ago, in the days of David Harum, the American home was up in the air, at least in most parts of the country. The "gingerbread castles" started the uprising in the period of rather primitive heating apparatus, which required enormous cellars for storage of coal and wood. The set tubs and the hand-operated washing machines contributed also to the development of the full basement. Because of the necessity and the desire for a large, well-lighted work and storage space under the house, the first floor was raised, sometimes three feet, sometimes even as much as four or five feet above the ground level.

From porches and sun parlors the family and their guests descended a number of steps onto the front lawn and into the back lot. Whether one looked out of a window or lolled contentedly in the porch swing, Mother Earth was low and far away. The flower garden was a colorful tapestry spread out on the lawn; the row of shrubs which was intended to separate the lot from the neighbors' was seldom tall enough to form a real enclosure. Usually, unobstructed views were had of clothes lines, ash cans, and the sheds of the surrounding houses.

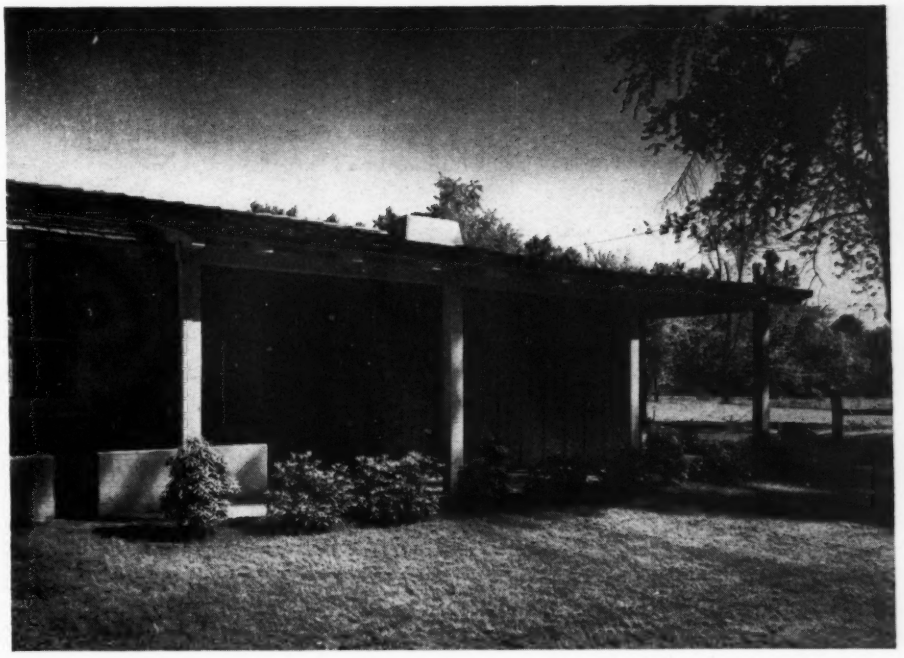
The modern American home is quite in contrast. The basement is no longer needed for the heating plant and fuel storage. The heating system has been greatly improved; oil, gas, and electricity have taken over in many districts. The furnace, or rather the heat generator, is now an ornament instead of the unsightly steam engine of thirty years ago. Modern insulation materials have even made radiant heating panels possible. The laundry has been revamped, too. Glistening fully automatic machines now wash and dry the clothes. Ironing is still a chore, but attractive machines lighten the labor. The kitchen-dinette-utility room, plus the oil tank under the lawn or the gas main, has taken the place of the basement.

At the same time the increased building cost has tended to limit the cubic footage of the dwelling. Guest rooms and large attics, parlors and separate dining rooms are becoming as rare in today's dwelling as the old-time basement. This cramping of the living quarters would be deplored, if it were not for one important saving grace — the ground floor, often the entire living floor, has come down to earth; the old elevation of two or three feet has given way to one of four or five inches. No longer does one look down on the lot from a height of three to five feet; instead the yard merges with the living quarters. The shrubs



The high foundation of Gracie Mansion, New York City, is partially hidden by shrubs.

OWN TO EARTH



The modern ranch-type house has little or no foundation to conceal.

around the grounds now really hide the surrounding property, the new plate glass picture window looks into instead of looking down on the garden. There is a natural, intimate relationship between the living room and the garden. All this means that the lot has changed its function, has become a direct extension of the living area — an "outdoor living room."

This change in altitude requires some changes in attitude. Gone are the days when foundation planting was needed to hide an unsightly part of the house. With the modern house, foundation planting is reduced to a minimum. Shrubbery under the windows spoils the pleasing proportions between window-panes and wall spaces that the architect has so carefully composed. Fully grown, the shrubs would obliterate even the windows. Only against somewhat large wall spaces can a climbing shrub, such as euonymus, or firethorn, especially if clipped, be considered an ornamental asset.

On the back lot an even greater change is taking place. "The garden" formerly meant a pattern of flower beds, filled with bulbs, annuals, perennials, or roses, located somewhere on the lawn where one could look down on it from the sun parlor. Now the whole backyard becomes a garden, a green and sheltered extension of the living room. The flowers need no longer be grouped together, forming an oriental carpet, because from the lower elevation the lawn is their foreground, the shrubbery their backdrop. No one would dream of locating them in the center of the plot, like the walnut table with the family albums in the old-fashioned parlor. The garden has turned into a garden space, a development parallel to the change from the nineteenth-century room, cluttered with furniture and "beautiful objects," into the modern interior scheme where around a more or less central space the various groups of interest and activity are arranged.

This modern arrangement, more spacious, informal, and livable, has created a different attitude toward garden paths, too. In the old-fashioned garden the flower beds formed a definite pattern, in which the paths played an important role. Nowadays the flowers and plantings are grouped around the lawn, which has been given prominence in its own right as garden space and as foreground. We no longer tend to dissect this valuable greensward with a network of gravel paths and thus destroy its unity. Only the lines of heavy traffic, from the back door to the garage, from the kitchen to the clothes lines, or utility area, need to be

(Continued on page 189)

Typical of a past era when the house looked down upon grounds and gardens.

DWARF EVERGREENS FOR MODERN HOMES

By H. J. Kohankie

THIS discussion of low-growing evergreens is intended to meet the problem of the foundation planting for modern, low, or so-called ranch types of homes. The ideal planting should provide year-round interest with persistent attractive foliage, flowers in season, and a naturalistic type of growth. Both coniferous and broad-leaf plants will be considered, all of which are hardy in Rehder's climatic zone five and some, particularly junipers and yews, thrive in zone four.

The dwarf, low-growing forms of arborvitae, spruce, and pine are so stiff and formal that they are better suited for memorial and other formal effects than for the use under consideration. However, the upright forms of arborvitae are desirable as tall accent plants in foundation plantings, as are the upright forms of junipers and yews.

Junipers and yews provide a wide range of naturalistic forms. The larger growing, spreading types are suitable for the background, forms of intermediate height for facing, and the low forms, particularly the trailing prostrate junipers, for carrying the green effect down to the base of the planting.

The background planting, in most cases, probably should not exceed four or five feet and the following evergreens may be held to that height with a minimum of pruning. One of the best for the purpose is the well-known *Juniperus chinensis Pfitzeriana*. It is a broad, graceful plant with attractive gray-green foliage. The form *Pfitzeriana compacta* is a less rampant grower, but otherwise similar. *Juniperus virginiana tripartita* is excellent for its broad irregular habit and provides a rich green effect. *Taxus cuspidata* is favored because of its open branching and rich green, durable foliage. *Taxus media* is more compact, and the leaves are smaller and of a somewhat lighter green color. *Taxus media Hicksii, Hatfieldii* and *Brownii* are all worth while but somewhat stiffer in habit of growth. It will be necessary to clip back all of these plants occasionally to keep them in bounds.

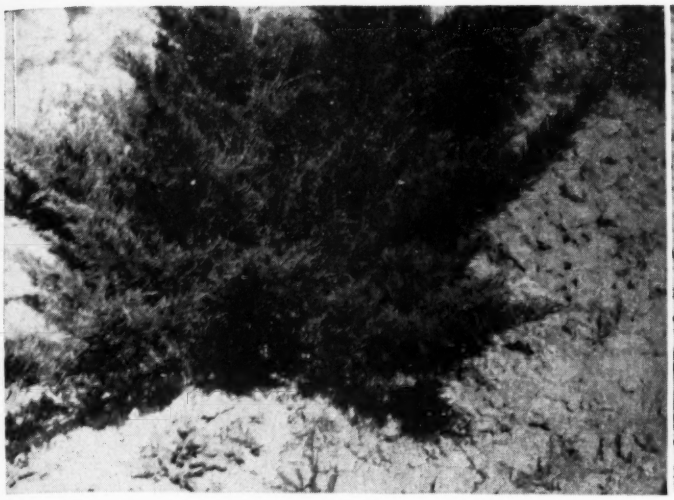
Juniper Bar Harbor, lower, is even more prostrate than *Juniperus horizontalis*, illustrated above.

For facing down the planting, these evergreens of lower stature are satisfactory. *Juniperus Sabina* is always valuable for its vase-like shape. *Juniperus Sabina tamariscifolia* has light gray-green foliage and develops a more or less low horizontal form. *Juniperus horizontalis plumosa,* of spreading habit, is much prized for its purplish coloring in winter. *Taxus baccata repandens* is invaluable with its low dense growth and rich green foliage. It does not exceed more than three feet in height and is excellent for use in front of windows, where a low planting is required.

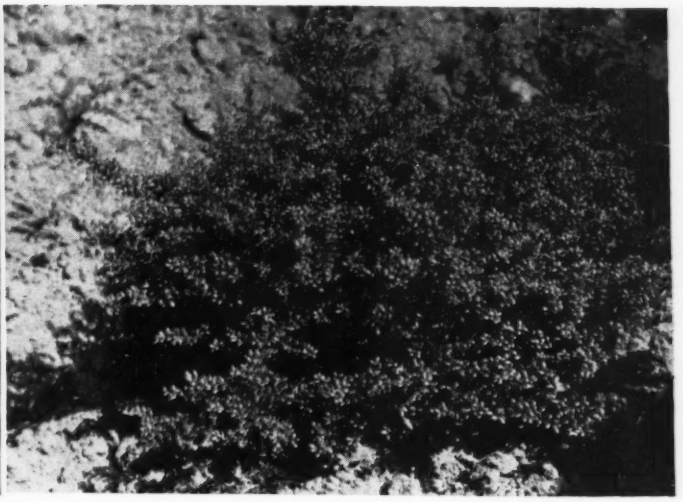
It is in this facing planting that the broad-leaf type of evergreen may be used to give wider variety and provide flowers. *Pieris floribunda* and *Pieris japonica* are always attractive because of their substantial foliage and abundant panicles of white flowers. *Azalea rosmarinifolia* is a flat spreading shrub bearing white flowers; the form *sekidera,* with pink flowers, is also popular. Two forms of Japanese holly, *Ilex crenata bullata* and *Ilex crenata microphylla,* are dependable evergreen shrubs, which are well furnished with small leaves. Our native inkberry, *Ilex glabra,* provides a symmetrical well-foliaged form of growth, and its black fruit, which persists well into the winter, is another interesting characteristic. The attractive flowers of *Chamaedaphne calyculata* and the large, glossy foliage of *Leucothöe Catesbaei,* together with its panicles of white flowers, add beauty to a low planting.

To merge the planting with the lawn, there are no better plants than the prostrate junipers. *Juniperus horizontalis* with green foliage and *Juniperus horizontalis glauca* with bluish green leaves are excellent for the purpose. Another trailing evergreen, *Juniperus chinensis Sargentii,* develops a very interesting compact low growth with blue-green foliage. These low-growing conifers may be supplemented with evergreen groundcovers such as *Pachysandra terminalis, Vinca minor, Hedera Helix baltica* and *gracilis.*

There may be some objection to the use of junipers because of their sus-



Juniperus Sabina is valuable because of its vase-like shape.



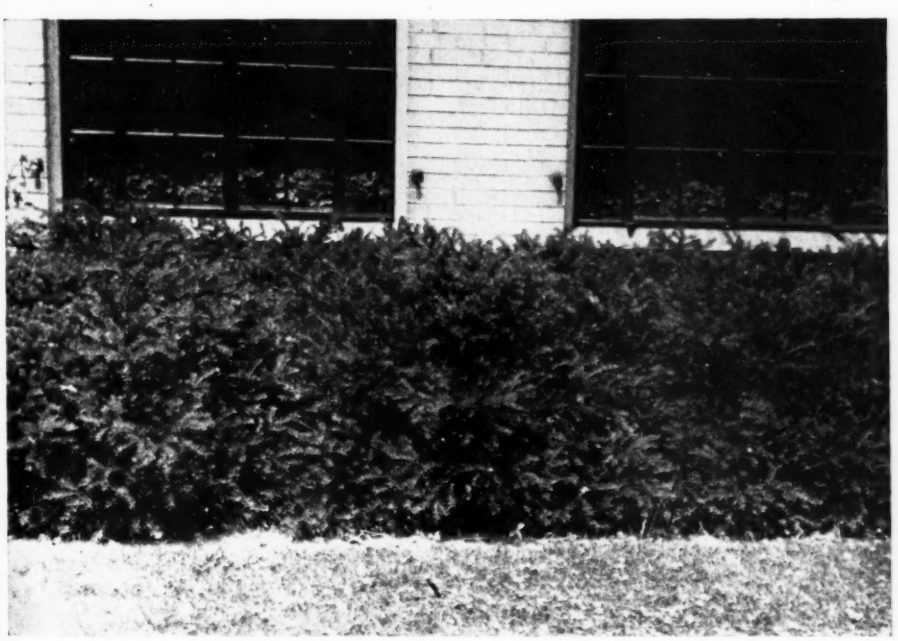
Ilex cornuta bullata is a dependable evergreen shrub.

ceptibility to red spider, and also because the prostrate kinds tend to develop straggly growth if neglected. As far as red spider is concerned, that pest is easily controlled with a simple spray. After all, if any planting is to be maintained in a healthy, vigorous condition, a certain amount of spraying is necessary to control plant pests. The alternative is to restrict the selection of plants to those which are more or less immune and that would result in an extremely limited plant list. As far as straggly growth is concerned, the prostrate junipers will provide dense mats if the ends of the runners are clipped back once or twice during the growing season. Since the foliage of this group ranges from dark green to blue-green, it always contributes much to the interest of a planting.

There is a group of broad-leaf evergreen shrubs which, while hardy in zone five, suffers from our winter sun to such an extent that the foliage deteriorates badly in late winter and does not recover until new foliage forms in May. During that period, such plants are likely to become an eye-sore and are best used in a remote part of the garden where they are not observed so often. However, in zone six the leaves suffer little or no winter injury and so the plants are desirable for foundation planting. *Mahonia Aquifolium* and *repens* are valued for their glossy leaves, yellow flowers, and blue fruit which accounts for the common name of "Oregon grape." The heathers, particularly *Calluna vulgaris* and varieties, as well as *Erica carnea, vagans,* and *darleyensis* are prized for both flowers and permanent foliage. Then, several species of evergreen barberry develop to perfection in the warmer zone. *Berberis verruculosa,* with low spreading habit, is very popular. *Berberis triacanthophora* of spreading slender growth, while not commonly planted, is decidedly worthwhile. *Berberis Julianae* and *Sargentiana,* growing more upright, are always satisfactory.

Finally, the evergreen cotoneasters must not be overlooked—*microphylla, rotundifolia, Dammeri* and *Dammeri radicans.* Each has a distinct type of growth and bears showy fruit.

No matter how careful one may be in selecting the plants, the planting will not be brought to perfection if feeding is ignored. Neglect in this respect is apparent in many foundation plantings. Wherever evergreens are used, it is vitally necessary to keep the plants well nourished; otherwise, growth becomes sparse and the foliage loses its rich color. There is nothing superior to an annual topdressing of well-rotted stable manure to keep the plants in a vigorous state. Also, it is well to remember that when plants are healthy, the attack of insect pests is less severe and plant diseases make less headway.



Taxus baccata repandens, planted twelve years ago in front of sun-room windows, is two and a half to three feet high and has never been clipped.

Huntington Botanical Gardens

By **Ronald B. Townsend**

Macrozamia Denisonii in the Huntington Botanical Gardens.

THE Huntington Botanical Gardens are located in the City of San Marino, ten miles east of Los Angeles. They are a portion of the late Henry E. Huntington's estate, which originally embraced six hundred acres of rolling land overlooking the San Gabriel Valley.

The name, Huntington Botanical Gardens, is not as well known or, perhaps as popular throughout the world as the Henry E. Huntington Library and Art Gallery, but they are the same institution. Gainsborough's "Blue Boy" and the "Gutenberg Bible" have made the Art Gallery and Library, respectively, world famous.

This institution—Library, Art Gallery, and Botanical Gardens — was founded through a deed of trust administered by a board of five trustees, namely, Chairman Dr. Robert A. Millikan, Vice-Chairman Dr. William B. Munroe, Dr. Edwin P. Hubble, James R. Page, and former United States President Herbert Hoover. Under this arrangement, the responsibility of the entire institution rests under one management and is financed by an endowment fund provided for by Mr. Huntington in the deed of trust.

The plants in the gardens can be divided into two groups; first, the Xerophytic material, and second, the non-Xerophytic material.

The Xerophytic group includes the cacti and other succulents. They are located in the section known as the Cactus Collection or, perhaps better termed, the Desert Plant Collection. This garden is the result of much effort and planning on the part of my predecessor, William Hertrich. He made several field trips to our deserts in America and also into Mexico and brought back with him actually carloads of specimens, including some of gigantic size. This garden in its present state totals approximately fifteen acres and represents thirty years of collecting, and much of its later growth is due, in part, to the generous contributions of many botanical institutions and individuals who have donated or exchanged seeds, cuttings, and plants.

The non-Xerophytic group includes the remainder of the plants in our Botanical Gardens. This group is divided further into palms, cycads, camellias and azaleas, cymbidiums, roses, sub-tropical trees and shrubs, and other ornamentals.

The first group mentioned, palms and cycads, is recognized as one of the largest and most extensive collections in this part of the country. Mr. Hertrich states that when he started collecting, there were one hundred and fifty-six species and varieties of palms alone. Some of these were planted for trial, since no planting in southern California contained these species and through the course of the years, it was learned that certain palms were either too tender for our area or the general conditions were not suitable. At the present time, we have in our collection one hundred and eighty species and varieties of palms and cycads. A book on the palms and cycads has been recently prepared by Mr. Hertrich, who is now Curator Emeritus. It is well supported by photographs, which Mr. Hertrich has made over the past forty years.

The camellia and azalea collection dates back to 1908, when two dozen camellia plants were acquired to enhance the general landscaping plan. In 1915, this number was approxi-

Cactus Garden, Huntington Botanical Gardens.

Left: *Jubaea spectabilis* and *Livistona australis*. Right: *Yucca australis*. Below: Arecastrum and cycads, all in the Huntington Botanical Gardens.

mately doubled by an importation from the Yokahama Nursery Company in Japan. There are many magnificent specimens as a result of these plantings; also, many seedlings were developed and are now part of the large collection. An organization known as the Friends of the Huntington Library were directly responsible for the first large addition of camellias and azaleas. From 1942 through 1944, this organization made it possible to add over one hundred additional varieties of *Camellia japonica*. Beginning in 1944, the Southern California Camellia Society became responsible for a phenomenal increase in the collection, until now the collection of camellias has reached more than nine hundred varieties and well over one thousand specimens.

The Huntington Gardens were one of the pioneers in introducing the first collection of Kurume azaleas as outdoor plants in southern California. Again with the assistance of the Friends of the Huntington Library, the azalea collection now contains all the well-known species, hybrids and varieties, as well as great specimens of rhododendrons.

The section of the Gardens known as the North Vista contains the abovementioned as well as many other shade-loving plants. The Camellia Garden, which is co-sponsored with the Southern California Camellia Society, is located in a canyon in the western portion of the Botanical Gardens. The entire area is covered by lofty and spreading native oaks and is regarded as a perfect situation for such a garden.

One of the most interesting plantings observed by the visitors during the spring is the out-of-door cymbidium collection. This was the first attempt in southern California to establish an out-of-door planting of cymbidiums. The botanical records do not disclose the exact year of this planting; however, according to Mr. Hertrich's notes, *Cymbidium Lowianum* was planted out in 1910. Other earlier hybrids were *C. Lady Colman, C. Alexanderi, C. Pauwelsii, C. Doreen, C. Swallow,* and *C. Beryl.* Just for a matter of interest, when one of the original plants was divided two years ago, we counted one hundred and eight back bulbs.

No gardens are complete without a rose garden. The original Huntington Rose Garden was very extensive and quite elaborate with rose pergolas. Today, the garden is about half the size of the original one and comprises nineteen hundred rose plants, representing eighty-five varieties of hybrid teas and floribundas. Each year outstanding new introductions are planted through the cooperation of the All-American Rose Selections Committee and rose growers throughout the country.

The following are only a few of the interesting trees and shrubs which help to make the Huntington Botanical Gardens known through the world for their beauty and variety of specimens.

There are two plantings of Montezuma cypress, *Taxodium mucronatum,* one near the rose garden and the other at the lower elevation in the lily pond area. These trees are over forty years of age, having been grown from seed collected by Mr. Hertrich in Mexico in 1908. Today, they are outstanding specimens.

Chionanthus retusa, the Chinese fringe tree, makes a most spectacular specimen when in flower during the month of April or May, depending on the earliness or lateness of the season. The tree is a mass of feathery white blossoms. It fruits heavily and germinates quite readily from seed. However, it is a slow grower and does not flower generally until four or five years old.

The genus *Erythrina* is a very colorful one. *E. coralloides* is most striking when in bloom with its coral-colored flowers on irregular candelabra-type branches. *E. Bidwillii,* a hybrid between *E. Crista-gallii* and *E. herbacea,* blooms continuously all summer long. It has the hardiness of one of its parents, *E. Crista-gallii,* and receives its good flowering habits from the other parent, *E. herbacea.* The collection contains eighteen species and varieties of erythrinas, about half this number of blooming size.

The magnolias are always a delight in the early spring. Although we are experiencing some difficulty during the hot summer months with some species in that the foliage does burn a little, they continue to thrive and produce good growth and well-formed flowers. This collection numbers over twenty deciduous types, and it is hoped that we can find the source in this country of some others, such as *Magnolia mollicomata.* Among the most interesting are the *Soulangeana* hybrids, and this section is well represented by Alexandrina, Burgundy, Brozzonii, *nigra,* and *rustica rubra.* There are two young specimens of *M. Campbellii,* which have not flowered up to date. When either of these first comes into bloom, it will be an event worth waiting for. The majority of these plants are comparatively young, ranging from four feet up to ten feet, so it will be a few years before the collection will be of real value.

North Vista, Huntington Botanical Gardens.

Another collection of great interest is that of eucalyptus and acacia. The eucalyptus collection began in 1915 when the first consignment of seed, containing sixty-odd species, arrived from Australia. In 1942 the United States Department of Agriculture sent 1,958 plants representing fifty-six species to our Gardens. This brought the total number of eucalyptus species to one hundred and five. The entire collection of rare type acacias, which was exhibited at the International Flower Show in New York in 1912, was purchased by Mr. Huntington and shipped here in two carloads. This early collection has been added to, and we have had about one hundred different species under cultivation off and on. Since acacias are short-lived, we are planning to replace our older species and add new ones to our collection.

There is one great benefit which the visitor derives from a visit to the Gardens and that is, that he is able to view matured, or almost matured specimens throughout the grounds. This one point seems to me to be most valuable, since plantings throughout southern California are comparatively young with the exception of a few gardens established about the same time as the Huntington estate. Associated with this is the fact that since the institution was founded as a botanical garden, accurate records have been kept as to source of material, its location on the grounds, pertinent notes, and references to authoritative botanical works in our botanical library, which is a portion of the main library but housed in the Curator's department. We realize that a plant collection without accurate records is worthless, botanically speaking.

The Huntington Botanical Gardens have received material directly from all over the world, from private citizens, from institutions similar to ours, from our own United States Government, and from plant expeditions such as Professor Goodspeed's to South America and Captain Kingdon-Ward's to the Orient.

At the present time much work is being done in propagating pines and other narrow-leaved evergreens for the recently established arboretum.

(Continued on page 186)

Full Moon Bridge in the Oriental Garden.

The Glastonbury Thorn

By **Donald P. Rogers**

WHEN Joseph of Arimathea, worn by his pilgrimage from the Holy Land, had climbed to the summit of Wearyall Hill at Glastonbury, he thrust his staff into the ground as a sign that his wanderings were at an end. The staff put out roots and leafy branches, and in the course of time blossomed, not only in the spring, when the hawthorn was flowering elsewhere in England, but also on Christmas morn. The tree that sprang from St. Joseph's staff is the Holy Thorn of Glastonbury.

This, in a few words, is the story of the Glastonbury Thorn. But there is more to it; and the legend, tradition, and verifiable history that form the story's background make it the richest and most moving ever to have centered in a tree.

First, there is Joseph. His name is recorded in all four Gospels, as "a good man and a just," "an honorable counsellor" — that is, a person of influence and probably of official position in Jerusalem — a secret disciple, and the owner of the Holy Sepulchre, who arranged and carried out the burial of his crucified Master. Christian tradition has three other things to say of him: that he had possession of the cup of the last supper, the Holy Grail, and bore it away from Judaea; that he was a merchant and worker in metals; and that he was the uncle, as well as the disciple, of Jesus. These circumstances may seem to have little to do with the Thorn; but they do lead to Glastonbury.

Glastonbury today is a little place some twenty-five miles south of Bristol, quite as far from the sea, and separated only by political boundaries from the rest of the dry land that forms the long southwestern peninsula of Great Britain. But twenty centuries ago, and for long after, it was the principal island of an archipelago, separated from neighboring islets and the main Devonian peninsula by marshes, creeks, and open water. On the island were two hills; and in that distant time it was inhabited by a people who lived in houses of mud-daubed wattle — that is, interwoven branches and rods. So much is established by geology, archaeology, and secular history. The hills must have offered a place of refuge from the waters, and the surrounding waters isolation and protection from hostile tribes. What is now barely upland was then a moated lake-village — and sanctuary.

We know that long before the Christian era traders from the Mediterranean had made the long journey to southwestern Britain for the tin that they needed in the making of bronze. It has been believed that Joseph of Arimathea was one of these, and that the pilgrimage that ended at Glastonbury was only a return along a way that he had taken, probably more than once, before. There is a legend that Joseph had not always made the journey alone, but that once, during the thirty years about which the Gospels have nothing to say, his Nephew had come to England in Joseph's company. For this reason William Blake, in one of his prophetical hymns, asked

"And did those feet in ancient time
Walk upon England's mountains green?
And was the holy Lamb of God
On England's pleasant pastures seen?

And did the Countenance Divine
Shine forth upon our clouded hills?
And was Jerusalem builded here
Among these dark Satanic Mills?"

Whatever the answer, to a man such as Joseph of Arimathea is held to have been, the southwest of England need not have been unknown, nor even unfamiliar. In the persecutions that followed the stoning of Stephen others left Jerusalem; and so, according to tradition, did St. Joseph, as a missionary, carrying what had immediately become a precious and sacred object, the Holy Grail. He went to the most distant place he knew, chose an island that promised sanctuary, and planted his staff. One more thing he did: he built a wattled hut and set it apart as a holy place — in all the world, since the other disciples could meet only in private houses, the first Christian church. To this statement it has been objected that some six centuries later Augustine was sent from the mainland to convert the heathen Britons. But when Augustine and his followers landed they immediately offered worship and thanks — and in a church. Some missionary had been before them, of whom Rome then had no record. At early councils of the Church, however, English bishops were granted precedence, on the ground that their church, founded by St. Joseph, was the first of all.

Because it was held to be the site of the first church, and perhaps because the Grail had first been taken there, during the middle ages Glastonbury was held in high reverence, and portions of its sacred soil were carried to all parts of Christendom. At Glastonbury there grew up a great religious community, with a glorious abbey church said to occupy the site of St. Joseph's tiny chapel. Great men were buried there as they now are at Westminster. Great men, and at least one king, and one queen.

Before it was Glastonbury the hilly island had another name, better known to many of us of this age, the name that we spell Avalon. There is no agreement on what it means — perhaps the island of apples, perhaps the island of the dead. In any case, the Glastonbury of more recent history is the Avalon of Malory and King Arthur and, probably, Joseph. It is of course the traditional place of burial of King Arthur — sacred soil in his day, as in a later one. A thirteenth-century monastic historian records that a short time earlier someone of the Glastonbury community became curious about a stone cairn near Glastonbury Abbey; that digging uncovered a double coffin hollowed from a great oak log, and marked by a lead plate inscribed, in Latin, "Here lies buried the renowned King Arthur in the island of Avalon, together with

Guinevere his second wife"; and that the bones it contained, of a giant man and a small woman, were reburied in the church.

The Abbey continued to flourish until its community, with the others in England, was disbanded in the sixteenth century; the Thorn grew where Joseph had planted it until the time of the Puritan rebellion against Charles I, when it was cut down by one who believed it idolatrous. But the stump survived until the middle of the eighteenth century, and its site is now marked with a stone reading "J.A. [Joseph of Arimathea] Anno D. XXXI."

And the living tree survives as well. Cuttings and scions of the Glastonbury Thorn had been established both about the abbey and elsewhere in England. They as well as the tree at Glastonbury were regarded as "the Holy Thorn," and the vandalism that destroyed Joseph's planting served only to demonstrate the immortality of trees and of legends. Not only is the Thorn still growing, but in parts of England the people still gather on Christmas eve to wait for its blossoming. On Christmas eve, but not on December 24th; for the Thorn is believed to bloom on Old Christmas, of the Julian calendar (now January 5). In fact, the date of blossoming of the Thorn was once, in the seventeenth century, put forward as evidence for the correctness of the old calendar, rather than the Gregorian.

Other thorns, elsewhere in the British Isles, are held sacred, or at least sacrosanct. Some undoubtedly mark the ancient places of meeting of outdoor courts, and of these some are piously replaced, by a cutting or another tree, if accident befalls them. Others mark early boundaries, and are left undisturbed under the scriptural injunction concerning landmarks. In Ireland there are many thorns, dedicated to one or another of the Irish saints or respected as the property of the Little People. But the Glastonbury Thorn is held in veneration both greater and of different quality. It belongs with Joseph, and Arthur, and the Grail; and it blossoms to honor the Lord's birthday.

At least, it does so in England, and in the close of Washington Cathedral. Ours at the Garden is blooming as this is written, in September. January 5th in New York is probably too severe for even such a toughened and indestructible old pilgrim as the Holy Thorn of Glastonbury.

Glastonbury Thorn on close of Washington, D. C. Cathedral

Camellia japonica.

CAMELLIAS

By **H. Harold Hume**

Camellia Santiana speciosa.

CAMELLIAS are native plants on the mainland of eastern Asia and the islands offshore. They first became known in England from herbarium specimens collected on the Island of Chusan in 1700 or 1701 by James Cunninghame. A description and an illustration were supplied by James Petiver in 1702. Living plants also came to England in an East Indian merchantman; the date given is 1739 but details are lacking, although English plant chroniclers often give additional historical information. However, it is known that Lord Petre of Thorndon Hall, Essex, had a camellia, evidently the one now known as *Camellia japonica,* in his greenhouse, in flower, in 1745. In that year, George E. Edwards made an illustration of a Chinese bird sitting on a flowering camellia branch for his book, A NATURAL HISTORY OF BIRDS, and furnished a description of the plant. From the general appearance of the drawing, it must have come into Lord Petre's possession some years before.

Carl Linnaeus gave the camellia its name in 1735 in honor of George Joseph Kamel, a Jesuit missionary who had gone out to the Pacific in 1688. There are several statements in camellia literature regarding Kamel's connection with the plant. It has been stated that it was he who brought the plant to Europe in 1739 and that he was in contact with Linnaeus. These statements are misleading, for Kamel died in Manila in 1706, the year before Linnaeus was born. Legends are strange things; in them the dead travel about and contact the unborn. Linnaeus based his name upon the illustration and description published by Engelbert Kaempfer in his AMOENITATUM EXOTICARUM in 1712, and there is nothing to show that Kamel returned to Europe after he went to the Pacific or that he ever saw a camellia.

Lord Petre's camellia or camellias apparently received little attention, and interest in camellia culture really began with the introduction of two *japonica* varieties, Alba Plena and Variegata, brought to England by Captain Connor in the British East Indian merchantman, Carnatic, in 1792. Other species and varieties of *Camellia japonica* secured in the seaport garden nurseries of China and Japan followed these to England and other countries of Europe. New varieties were secured from seed by propagators, and in 1837 the Italian, L'Abbé Bérlèse, in his MONOGRAPHIE DU GENRE CAMELLIA gave the names of two hundred eighty-two with descriptions of most of them. From that time on, the numbers increased until it may not be far wrong to say that three thousand have been named. China, Japan, New Zealand, Australia, and other areas have made their contributions.

In 1797 or 1798, the first camellia recorded came to the United States, and Michael Floy added Alba Plena in 1800. Other plants were introduced and grown in greenhouses in Boston, New York, Philadelphia, Baltimore, Washington, and elsewhere. There was great interest in securing new varieties, many seedlings were raised, and about two hundred American varieties were named. Camellias were fashionable plants in the United States from 1830 to 1860, after which interest in them declined until revived about 1920. Now camellias are grown in the East in gardens from Virginia to Florida, west into Texas, and in the Pacific Coast states, California, Washington and Oregon. Elsewhere in sections too cold for them out-of-doors, they are prized as greenhouse plants. They are esteemed particularly because they come into bloom at a time of year when flowers in gardens are limited in numbers. Their flowering season extends through a period from October into March and April.

Although the genus *Camellia* is fairly large—it comprises about sixty-five species adapted to warm temperate climates and to tropical and subtropical areas — only a dozen or so are known to be in western collections. These are *C. cuspidata, fraterna, hongkongensis, japonica, maliflora, oleifera, reticulata, rusticana, saluenensis, Sasanqua, sinensis, taliensis,* and *Tsaii,* about half of which are to be found growing out-of-doors at this time.

The greatest number of garden varieties has been derived from *C. japonica, reticulata,* and *Sasanqua,* and of these three *C. japonica* has provided by far the largest number. Of the other species, *sinensis* (tea plant) is often found in southern and western gar-

dens. *Maliflora* is met with occasionally. Three species, namely *C. saluenensis, cuspidata,* and *oleifera* have received a considerable amount of attention in England but are scarcely known in American gardens. *C. Tsaii,* occasionally found in English gardens, is an interesting plant that from a distance looks like an evergreen *Philadelphus.* It is hoped that plants of the species may become known in American camellia gardens, for they make fine specimens. Sasanquas, as a group, are early flowering; a few japonicas come into bloom with them.

Varieties in large number are available, some of them old and time tested, others very new, from which selections may be made. Camellia flowers are of many forms and are divided into several groups, single much like a single rose in appearance, semi-double with more petals, incomplete double with stamens and petals intermixed, complete double of several types in which all stamens have become petals. There are two basic colors, white and red — with various shades and tints of pink between — and there also are variegated sorts, striped, spotted, splashed, blotched, and shaded. Colors in most variegated kinds do not follow a uniform pattern.

There are many hundreds of varieties in the *japonica* group, a long list indeed, from which selections may be made that will cover a blooming season from October to April.

Japonica varieties (single): Daitarin, large, carmine-rose, opening flat; Kimberley, large, turkey-red, cupped; Mihata, large, blood-red, filaments pink, large anthers; Pink Poppy, small to medium, carmine-rose, very attractive.

Japonica varieties (semi-double): Adolphe Audusson, large, self turkey-red, breaks to variegated colors; Lady Clare, large, carmine-rose with darker veins and splashes; Lady Vansittart, medium, variegated carmine-rose on white ground, variable; Magnoliaeflora, medium size, self white, flushed carmine-rose; Matsukasa, medium, petals elevated, camellia-pink, variegated with white; Ville de Nantes, large, variegated, white and turkey-red.

Japonica varieties (incomplete double): Daikagura, very early, large, carmine-rose, blotched white, variable; Elegans, large, self carmine or variegated with white; Haku-rakuten, medium to large, white; Herme, medium, variegated, carmine-rose margined white, variable in color; Paeoniaeflora, large, elevated, variegated white with carmine, excellent; Rev. John G. Drayton, medium, self carmine-rose, dependable; White Empress, large, self white, vigorous and free flowering.

Japonica varieties (double): Alba Plena, medium, imbricated, white, early; Frau Minna Seidel, small to medium, imbricated, light carmine-rose; Lallarook, medium, imbricated, chromatic self carmine, variable in shading; Mathotiana, large, incomplete imbricated, self carmine, often purplish; Aunt Jetty, medium, irregular, self turkey-red or variegated; Debutante, medium, irregular, chromatic carmine-rose, excellent; Prof. C. S. Sargent, medium, irregular, self turkey-red; Woodville Red, large, irregular, self neyron-rose.

Reticulata varieties. For many years only the type species, which was brought to England first in 1820, was known. Recently Descanso Gardens have added a number of very lovely sorts from Yunnan, the Chinese province, where *C. reticulata* is native.

Butterfly Wings, large, semi-double, crimson to rose-madder, crinkled, variable; Changs Temple, very large, semi-double, bright pale pink, vigorous; Cornelian, large, semi-double, turkey-red, variegated white and or-

Camellia Cheerful in the famous Bellingrath Gardens near Mobile, Ala.

Camellia Snowdrift in the garden of D. C. Strothers in Fort Valley, Ga.

chid-pink; Lion Head, large, semi-double, turkey-red variegated white; Noble Pearl, large, semi-double, turkey-red; Purple Gown, very large, double imbricated to double irregular, wine-red; Willow Wand, medium, double, pale velvety pink.

Sasanqua varieties. These number about one hundred in the United States. They are early flowering, mostly before Christmas. Here are a few:

Briar Rose, single, medium, self-solferino-purple; Gulf Glory, single, large, self white; Hebe, single, large, solferino-purple, free flowering; Hinode-Gumo, single to semi-double, large, shaded white at center to rose-bengal at margins; Mine-no-yuki, medium semi- or incomplete double, white, free flowering; Pink Snow, small, incomplete double, rhodamine-pink, fine.

Camellias are propagated from cuttings and by grafting, usually from cuttings. These are made from growth of the current season, mostly late in July and August. They are about three or four inches long with two or three leaves, and the lower one or two of these are removed. They are handled in beds in greenhouses or, in the Lower South, in the open. The propagating medium used commonly is coarse, sharp acid sand, and the cuttings are dipped in Hormodin No. 3 powder before insertion. Particular attention must be given to watering and syringing. Cuttings may be left in the rooting medium until the following spring, when they are potted or transferred to specially prepared beds to grow on for a season.

Grafting is done in mid-winter (January and February) in a greenhouse, using a closed propagating bench, or in the open. In outdoor grafting, the scions as soon as placed are mounded to their tips with earth or sand and covered with a cloche until growth starts, whereupon the cloche is removed. Stocks used in grafting are seedlings of *japonica* and *Sasanqua,* or plants grown from cuttings of certain varieties of the same species that root readily.

Soils of various kinds in gardens produce good plants and flowers; however, a few features must be present in all of them for best results. They should be fertile, they should drain readily, and they should be acid. Clay soils can be improved by adding sand, and sandy soils can be made better by adding some clay. Both should have vegetable material in fairly generous amounts mixed into them. Peat, decayed leaves, pulverized bark, partially rotten wood, and similar substances are all good. Well-decayed cow manure is excellent. These materials can be spread over the surface of the ground to a depth of three or four inches and dug into the soil preparatory to planting a group. Specially prepared soil should be used in planting. It may be made by combining sand, woodsmold or peat, and good garden soil in equal amounts with a six-inch pot full of commercial camellia fertilizer thoroughly mixed in each wheelbarrow full. This same mixture is satisfactory for growing plants in pots.

The usual planting time is winter. Perhaps more camellias are planted during February than in any other month but, of course, they may be set out earlier or later. Plants secured from nurseries are pot grown, or they have been produced in open ground and lifted with balls of earth about their roots. These balls are wrapped in burlap (B & B plants). Holes for the plants should be generously large to make room for goodly amounts of prepared soil. In setting the plants, the burlap is not removed and the top of the ball is brought up to the level of the surrounding ground. This is important. Plants set too deep will not grow and thrive satisfactorily. Soil

should be tightly packed about them and water given liberally. Water in planting serves two purposes: it supplies the plants with moisture, and it helps to fill in any air spaces that may be left. It is well to make a circular ridge about each plant to form a basin for water given subsequently from time to time. Camellias require well-drained moist soil about their roots, and particular attention should be given to watering until they are established. Frequent syringing of their tops is very beneficial.

Camellias respond to fertilizing. Good soil and fertilizer used in planting, though most helpful in starting the plants off, will not supply plant food indefinitely. There are specially prepared commercial fertilizers for camellias, valuable in securing good growth and flowers. Sometimes mistakes are made in applying too much. As an indication of what can be safely used, a pound for each of two applications is enough for a plant with a good head three feet high. Spread the fertilizer thinly and evenly about the plants twice a year, in early spring (February or March) depending upon the location, and again about July 1.

Water in even supply in the soil is especially necessary in growing camellias. While it should drain away readily, it should be supplied frequently enough to keep the plants supplied with what they need. A mulch is valuable in maintaining uniform soil temperature and moisture. It may be of such kinds of vegetable matter as are readily available; and as it decays, it should be renewed. Peat, leaves, grass clippings, buckwheat hulls, peanut shells, and many other materials are all satisfactory. Do not overdo it — a mulch three inches deep is enough. Too much may be harmful. Syringing the tops of camellias daily during hot dry weather is very beneficial. The plants rejoice in a humid atmosphere.

Camellias make excellent greenhouse plants and are especially worthwhile, because the temperature under which they do best need not, in winter, exceed 55°. Finer flowers can be produced, where the plants are protected from wind and beating rain, than can be secured in the open. *C. fraterna,* recently brought in by Plant Exploration and Introduction, USDA, promises to be a fine greenhouse camellia.

CONSERVATORY PLANTS (from page 173)

The selection of plants depends on the whims of the gardener. Fortunately, the many kinds offer a selection for the most discriminating. It must be remembered, however, that in the smaller conservatory, where the space is limited, large plants cannot be expected to develop into the fine specimens to which they are capable of developing in the larger conservatory. Nevertheless, some palms should always be grown for "in-the-house" decoration. One of the best, for it is not only most attractive but keeps its growth within bounds, is the dwarf date palm *(Phoenix Roebelenii).* It can be grown from seeds quite easily and with every hope of success. Palms, when small, can also be used as dish-garden material.

The list of suitable plants for the small conservatory is so long that it is difficult to suggest just a few; but one must mention the well-known gloxinia, with its delightful form and colors; the great begonia group which contains so many types and varieties of floral elegance; the calla, with its white flower coming from an unattractive tuber; the lily-of-the-valley, which is so easily grown; *Oxalis Bowieana,* with its large pink flowers and decorative leaves, and the Bermuda buttercup or *Oxalis cernua* with its nodding bright yellow flowers.

During recent years, the African violet has become increasingly popular as a conservatory or house pot. Yet it is not many years ago that only the species, *Saintpaulia ionantha,* was known. Strangely enough, it seems to thrive under varied conditions, but its home was originally in South Africa, and an even temperature from 65° to 70° is recommended. The African violet resents full sun, although a little in the early morning will not stop it from flowering. Contrary to general opinion, the foliage can be sprayed with room temperature water and spraying will aid in keeping down insect attacks. The hybridists have been most active, as the great number of varieties introduced in recent years attests, and it is hard to say what the future will bring.

The conservatory may be used as a display place, or to grow material for outdoor display, or to raise plants for cut flowers. At Christmastime, the flaming red, white, or pink poinsettias will surely be wanted and primroses of various types will also prove useful. The flowering maple will always find a complimentary spot in the house as will calceolaria and cineraria, both of which may be grown from seeds. The schizanthus, with its strange flowers, will, if properly cared for, fill the conservatory with color. The fine *Hydrangea macrophylla,* with its great head of snowy white, is useful for home decoration.

The sundew, *Drosera rotundifolia,* may be grown if for no other reason than to delight the children. It grows naturally in sphagnum bogs, which suggest the kind of material to use when growing it in the conservatory.

One should not neglect the opportunity to add interesting vines to the general display by planting them in hanging baskets. A rich soil is necessary with a copious amount of peatmoss to hold moisture; baskets are often neglected and suffer from lack of water. The vines should be kept trimmed to form a compact mass. A few acceptable kinds are *Fuchsia procumbens,* wandering jew, Kenilworth ivy, English ivy, *Asparagus Sprengeri,* lobelia Sapphire, *Philodendron* in variety, and ivy-leaved geranium.

HUNTINGTON GARDENS (from page 180)

We have over two hundred and twenty-three species and varieties of pines and allied genera and hope to continue this work so that we can determine just which narrow-leaved evergreens do well under our climatic conditions and also to grow them to specimen size, allowing sufficient space around each specimen for natural growth. This is of great interest to the hybridist of pines as well as to foresters in our State.

The Huntington Botanical Gardens as well as the Art Gallery and Library are open to the public every day except Monday from one o'clock until four-thirty. However, during the month of October, both gardens and buildings are closed while necessary renovations are being made. There is no admission charge, but reservations should be made in advance.

For the Younger Generation of Gardeners

Christmas Flower Legends

By Dorothy Ebel Hansell

WHEN we were all very young, my brothers and I and my cousins, we gathered around Grandmother on Christmas afternoon for a very special story. To us, it was as much a part of Christmas as was the tree and presents and big family dinner.

Up early in the morning, eager to take the things out of our stockings hanging by the fireplace and to open all the gay and pretty packages under the Christmas tree, we were all more than a little tired by late afternoon, though not one of us would admit it. So after dinner, while the older folks talked, Grandmother would call us children together. Sitting in a rocking chair with the youngest grandchild on her lap, and the rest of us pressing around her just as closely as possible, she would hold our quiet attention as she told her story.

One year it was about Christmas in New York City when she was a little girl. Maybe you'll find it hard to believe, but there were gardens and country roads right in the heart of New York City in the 1870's. At Christmas, Grandmother and her four sisters and brother and father and mother would ride in a sleigh, with bells jingling on the horses' reins, over the snow-covered roads. We liked to hear her describe their Christmas tree, a twelve-foot balsam-fir that reached from floor to ceiling in their parlor and was decorated with glittering ornaments from France and Germany. We liked to hear about the singing of Christmas carols in the streets of New York on Christmas Eve, and how our great grandparents welcomed beggars to their door on Christmas Day and gave them food.

Another year Grandmother told us how holly and mistletoe came to be linked with Christmas, and the white chrysanthemum, too. You all know holly and mistletoe, for your mothers decorate your homes with these greens. But the white chrysanthemum at Christmas seems strange, doesn't it, for we usually associate chrysanthemums with November, with college football games and Thanksgiving Day.

But a long time ago in the Black Forest in Germany, a poor peasant and his family sat eating their supper of onion soup and black bread. They heard a sound as though someone were weeping outside the door of their log hut that bitter cold night. Then they thought it was only the wind howling; but after they had heard the noise for several minutes, the father decided he had better open the door and see what it was all about. There on the steps stood a ragged boy, blue with cold. He told the boy to enter, and the mother rubbed his hands and feet, then wrapped him up in a blanket. The children shared their scant food with him, each brother and sister giving up a small piece of bread and a little soup so that the poor hungry boy might have some food.

And what do you think happened when the food was placed before the little boy? The blanket fell away and his ragged clothes were changed into a shining white garment, and a halo appeared over his head. Before any one in the family could recover from his astonishment, the little boy said, "I am the Christ Child," and then quickly disappeared.

When the father opened the door the next morning, he found two beautiful white chrysanthemums where the little boy had stood. And so to this day, Grandmother ended her story, the peasants in the Black Forest in Germany try very hard to have chrysanthemums blooming in their huts on Christmas Eve.

Another year Grandmother told us the beautiful legend of the Christmas rose. Do you know it? This is the way we heard it from her lips:

Abbot Hans had heard for years, ever since he was a little boy, about the wonderful Christmas Eve garden in Göinge Forest. One day, when the mother of a forest family visited the herb garden at the cloister, Abbot Hans arranged to visit her cave in the forest on Christmas Eve.

While they were having supper in the cave, the Christmas bells began to ring and the whole forest suddenly

Perhaps this is the way the Christmas rose looked when it bloomed on Christmas Eve in Göinge Forest.

changed its appearance. Snow vanished from the ground, grass turned green, trees put on leaves, spring flowers burst into bloom. Abbot Hans could hardly believe his eyes — but he knew it was a miracle, and he felt very humble.

However, the brother who accompanied Abbot Hans was not such a good man; he did not believe in miracles. He was sure all this strangeness was due to witchcraft. In his fear and anger, he struck at the little white dove that rested on Abbot Hans' shoulder.

In a flash everything turned to darkness. Frost fell on the ground, leaves dropped from the trees, flowers shriveled up. Abbot Hans was heartbroken. He felt he never could outlive this shame and fell dead upon the frozen ground. The brother and the forest family picked him up and carried him back to the cloister. On the way back, the brother noticed the white roots which were clutched tightly in Abbot Hans' hand. He took them and planted them in the herb garden at the cloister.

The next Christmas Eve when he walked through the garden, feeling sorrowful for what he had done, he happened to look down at his feet. Right on the very spot he had planted the little roots, he saw the most beautiful white flowers! He picked and took them to the Bishop, telling him they were the flowers Abbot Hans had promised to bring back from Göinge Forest.

And, so the story goes, this is why the Christmas rose blooms in midwinter, as though she can never forget she once celebrated Christmas Eve in Göinge Forest.

FOUNTAIN OF YOUTH **(from page 170)**

dians find it, due to superstition, they cut or burn it. This aralia is sometimes transplanted.

Indians complain that "white folks dig up on the Reserve," such plants as mountain-laurel (rare), lady-slippers and azaleas, and break down dogwood and bittersweet, the latter a valuable asset for sale on city streets. Sassafras, so common on the Reservation, is an index to spring, for when "Sassafras Charlie" used to appear with his neat bundles of sassafras roots on Buffalo streets, spring had really come. The Indians sit stolidly on the sidewalks, hour after hour, never holding out or proffering their wares, nor attempting in any way to attract attention; they begin with sassafras, arbutus, then violets, spring-beauties, crab-apple blossoms, lady-slippers, and end with bittersweet.

The rare *Cornus Baileyi* and *asperifolia* are not uncommon, the latter is the rough-leaved dogwood. In rich woods are to be found, blue cohosh, *Caulophyllum thalictroides;* two cardamines or spring-cress; stone-root, *Collinsonia;* two species of water-leaf, *Hydrophyllum;* two toothworts or *Dentaria;* carpets of two species of spring-beauty, *Claytonia;* running strawberry bush, *Euonymus obovatus,* elsewhere rare, together with many more plants that lack of space will not permit enumerating.

On the open Reservation are five species of bee balm, *Monarda,* one rare; carpets of brilliant phlox; the barren-strawberry, *Waldsteinia fragarioides.* In rich ground are the violets, *canadensis* and *striata,* creamy and very beautiful. Rare *Viola Rafinesquii* and *Lovelliana* are to be found in some places, and the flats are azure with various other violets. The side hills hold nodding columbine, and the early clustered buttercup, *Ranunculus hispidus.* Along the creek grow the rare *Polanisia graveolens* and sneezewort, *Helenium.*

The green dragon, *Arisaema Dracontium,* is infrequent; and, strange to say, is easily passed and overlooked in spite of its peculiar appearance. For years I failed to see it, where later I noted a whole colony.

The North American Papaw, *Asimina triloba,* proved to be not uncommon, though the fruit was never found. It is obviously impossible to mention all the rare plants; a mere catalog of botanical names is often meaningless except to a botanist.

In that admirable book, FLORA OF THE NIAGARA FRONTIER REGION, by Charles A. Zenkert, published by the Buffalo Museum of Science, are recorded the results of years of research; yet the surface has scarcely been scratched and further exploration of this botanical paradise is bound to be rewarded.

HERBS **(from page 172)**

lowing plants were cultivated during the rule of the Twelfth Dynasty (2000-1783 B.C.): *Ricinus, Coriandrum, Ficus carica.*

Another plant cultivated at a very early date is *Papaver,* whose seeds were found in lake-dwellings dating from about 2000 B.C. It was used as food and as a medicinal herb for obtaining opium in countries to the south of the Black Sea, in particular in Asia Minor and in Egypt.

A study of the history of the use of medicinal herbs by ancient peoples shows that some twelve thousand different species of herbs were used by different peoples at different times. Thus the Arabs in the period between 600 and 1200 A.D. were well acquainted with twenty-six hundred remedies, of which fourteen hundred were of plant origin. The Greek physician Hippocrates (460 B.C.) named about two hundred herbs. The physician Dioscorides (first century A.D.) indicated five hundred species of herbs. Contemporary medicine makes use of about two hundred to two hundred fifty herbs.

The number of herbs used varies in the different periods, sometimes increasing, sometimes diminishing. Some herbs, once famous and then forgotten, were later rediscovered and medically accepted. Thus *Conium, Aconitum, Hyoscyamus,* and *Datura* were reintroduced into medicine in 1760. The same applies to *Ricinus communis,* the oil of which was already used by the Egyptians in prehistoric times and then rediscovered in 1764; *Cortex Granatae,* well known at the time of Celsium (first century B.C.) and rediscovered as a remedy against worms in 1805; and *Digitalis,* used in folk medicine for several hundred years and introduced in official medicine in 1785.

Part II of this paper will appear in the January-February 1953 issue of The Garden Journal.

DOWN TO EARTH (from page 175)

surfaced — and as unobtrusively as possible with large slabs, rectangular or random. Within the main space we hardly need definite paths. The "line of travel" will vary with the seasons, with the time of day. If there is a definite spot, in the shade of a tree or in the seclusion of a niche between the lilacs and the mock oranges, for example, where the garden furniture, the low tea table and the wheelbarrow chairs, are in daily use, the lawn will soon show wear and tear, and that part may be paved. In any case, the path or the pavement is not an end in itself; it is not an ornament but simply a necessity. Therefore, it should not stand out noticeably but blend into the general picture.

With the low-slung modern dwelling, flowing onto the lot with terraces and pavements, the best solutions are found in surrounding a definitely shaped lawn with fences, hedges, shrubs, and flower borders; in avoiding the use of tall objects in the middle of the open space; in shaping this space in relation to the "spatial forms" on the terraces and in the adjoining living areas of the house.

Individual designs will arise with every house. Even if the orientation toward the sun and the floor plan of the house are identical, the arrangement of furniture, the size, habits, and hobbies of the family will differ; where lot size is equal, surely the view onto the background of the adjoining house will be different. Even the "Levittowns" show considerable differences between lots, after they have been lived in for a few years! That is why recipes are of so much less value than general principles; why every case has to be analyzed, and a design developed that fits the family, the house, and its situation. There is no cure-all — but there are unfortunate practices to be avoided.

One of the most universal of these is the foundation planting. In the older houses, the ring of foundation planting was often justified as "tying the house to the ground," and, in fact, it often corrected a feeling of tallness, of not belonging. But in the newer houses, no tying down is necessary; they are down and stay there. No correction of vertical elongation is needed; in fact, we might sometimes wish for greater height. This lowness and squatness can only be exaggerated by a fringe of greenery which hides the lower part of the walls. Does that mean that all plantings close to the walls should be avoided? By no means! Some wall panels, unbroken by windows, may be made more interesting if partly covered by a vine or a shrub trained on a trellis. We do not want to enclose the house in a tight collar; but, perhaps, its proportions may be enhanced by beds of groundcover or low branching shrubs at definite points. Again, no universal remedy is possible, though some widespread ailments are discernible.

Thus, in many ways, the contemporary house presents new problems in landscaping. The simple fact that the modern American house has come down to earth, until the living rooms are nearly level with the ground, has materially affected the treatment of front and backyards. Foundation planting has been modified and the concept of the garden has been changed.

Salute to the Trees

Many a tree is found in the wood;
And every tree for its use is good;
Some for the strength of the gnarled root,
Some for the sweetness of flower or fruit;
Some for shelter against the storm,
And some to keep the hearthstone warm.

Some for the roof, and some for the beam,
And some for a boat to breast the stream;
In the wealth of the wood since the world began
The trees have offered their gifts to man.

But the glory of trees is more than their gifts;
'Tis a beautiful wonder of life that lifts
From a wrinkled seed in an earth-bound clod
A column, an arch in the temple of God —
A pillar of power, a dome of delight,
A shrine of song, and a joy of sight!

I have camped in the whispering forest of pines,
I have slept in the shadow of olives and vines;
In the knees of an oak, at the foot of a palm,
I have found good rest and slumber's balm.
And now, when the morning gilds the boughs
Of the vaulted elm at the door of my house,
I open the window and make salute:
"God bless thy branches and feed they root!
Thou hast lived before, live after me,
Thou ancient, friendly, faithful tree."

Henry Van Dyke

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BOOK REVIEWS

ILLUSTRATED GUIDE TO TREES AND SHRUBS. Arthur Harmount Graves. 240 pages, illustrated, indexed. Published by the author, Wallingford, Conn. 1952. $4.

From his many years of conducting classes at the Brooklyn Botanic Garden in the identification of trees and shrubs, Dr. Graves has evolved first a teaching guide (with Miss Hester Rusk) and now an illustrated guide. Both leader and student in similar organized groups will find this work a valuable aid. The illustrations by Miss Maud H. Purdy, also formerly a staff member of the Brooklyn Botanic Garden, are a most useful part of the book. It is a pleasure to see different forms of hairiness of stems so well delineated.

To the beginner a section, "Short Cuts to Naming," presented somewhat diffidently by Dr. Graves, should be the most helpful at first, for here are collected together all the outstanding characteristics of tree and shrub that everyone uses for sight identification.

Its listings are not intended to be all-inclusive, but I do miss the native crab-apple (of western New York), *Malus coronaria,* which has ornamental double-flowering forms. Also, it is to be hoped that the simplified treatment of the native *Crataegus* made by Ernest Palmer may be assimilated into more of our books treating the native trees.

There seems likely to be an increase of interest in trees and shrubs sparked by Dr. Wyman's two recent books, by D. C. Peattie's A NATURAL HISTORY OF TREES, and by Rutherford Platt's AMERICAN TREES. Dr. Graves' book may well serve to channel enthusiasm to understanding.

BERNARD HARKNESS
Division of Parks
Rochester, N. Y.

PLANT HORMONES. In "Plants & Gardens," Vol. 8, No. 1. George S. Avery, Jr., Editor. 112 pages, illustrated. Brooklyn Botanic Garden, Brooklyn, N. Y. 1952. $1.50.

Here is the most up-to-date and the best non-technical treatment of the entire field of plant hormones I have seen. It had to be the best because its editor, Dr. George Avery, Jr., Director of the Brooklyn Botanic Garden, is one of the outstanding experts on plant hormones. His introductory chapter, "Hormone Primer," which explains what hormones are and what they do, gives this interesting publication the rousing send-off it justly deserves. Included are well-illustrated articles by some of the best research men in the field, such as Doctors Hitchcock and Zimmerman of the Boyce Thompson Institute, original discoverers of the synthetic plant hormone 2,4-D; Doctors Paul Marth and S. L. Emsweller of the United States Department of Agriculture; and Dr. L. C. Chadwick of Ohio State University.

Extremely useful to gardeners are charts listing four hundred fifty-four different weeds and the proper chemical control for each. Finally, George Vradenburg, Jr. of the Brooklyn Botanic Garden staff has compiled about ten pages of tables on "Synthetic Hormones and Other Chemicals Useful in Growth Control." These include the trade name preparations of hormones to induce better fruit set, to prevent preharvest drop of apples and pears, to root cuttings and to kill specific weeds. Every modern gardener should secure a copy of this excellent publication.

P. P. PIRONE

OUR GARDEN SOILS. Charles E. Kellogg. 232 pages, 5 figures, 11 tables; indexed. Macmillan, New York. 1952. $4.

The author makes one realize that soils are more than "skin" deep. Soils have a top, sides, and bottom. Most gardeners think only about the top and forget that soils extend into the ground two or more feet and are bounded by other soils. The author points out that soils are complex and differ from place to place, but an understanding of what soils are made of and how they differ assists the gardener in managing his soil for best yields.

This book brings "down to earth" to the layman's level highly specialized and technical information on soils. Such terms as texture, structure, soil color, profile, consistence, and drainage are clearly described. Aspects of soil management, such as plowing and spading, time of tillage, mulching, and seed beds are discussed.

An excellent discussion of the place of organic matter in a soil is given, along with the use of chemical fertilizers. Soil watering is treated thoroughly. The chemical reactions in a soil are discussed, especially soil acidity and how it may be changed.

A chapter considers the problem of fertilizing the soil for best yields. The composition and action of the common fertilizers are given. A table is included on how much fertilizer should be applied to soils. An entire chapter is devoted to lawns and their care and another one on how to start and move plants. Points on the planning of a garden are considered.

An appendix includes information about soil maps, preferences of selected plants, data on planting suggestions, yields of selected vegetables, and a list of references for further reading.

For gardeners vitally interested in their soil and how to use it for maximum yields, this book is a *must.* Written by an outstanding soil scientist, it is objective in its treatment of the subject — this is in contrast to the fanatical treatment given soils by some cultists.

The book is well printed and practically devoid of errors. Well-chosen photographs and figures would have lightened the reading and served to elucidate the subject matter.

C. L. W. SWANSON
The Connecticut Agricultural
Experiment Station
New Haven, Conn.

TREES AND SHRUBS IN EASTERN NORTH AMERICA. Benjamin Blackburn. 358 pages, eight linecut drawings; bibliography, index. Oxford University Press, New York. 1952. $6.

Actually this is a book of keys to many of the deciduous and broad-leaved evergreen plants being grown in eastern North America. It is aimed at the advanced amateur who is ready for slightly more advanced keys than are commonly found in many texts. About 2,300 species and varieties are treated here, and it is, without doubt, one of the first attempts to bring lengthy vegetative keys before the gardening public.

Botanical keys frequently prove irksome to the amateur, for flower and fruit, on which the keys are based, are frequently unavailable, either because the plant in question is too young or the season is not right. These keys, using vegetative shoots chiefly, are usable whenever the plants are in normal leaf.

Dr. Blackburn received some of his early training in this field of identification under Professor Ralph Curtis, at Cornell University, who has been outstanding in this field of identification studies for decades. Dr. Blackburn has drawn fully on the leading texts at his disposal and has spent considerable time examining living plants and herbarium material first hand.

It is unfortunate that *Taxus, Juniperus,* and all the conifers are omitted, for here are found many of the valued ornamental plants about the home grounds. The seven pages of drawings well illustrate the botanical terms necessarily used in the keys, and the bibliography and glossary are most helpful.

Here, then, is a book of keys which can prove most helpful to the advanced amateur who is willing to acquaint himself with a minimum number of botanical terms all fully explained in the text. The chances are that most of the deciduous and broad-leaved evergreens grown in the gardens of the East can be found in it — one of the most important reasons why gardeners in general should familiarize themselves with its contents and learn to use it.

DONALD WYMAN
Arnold Arboretum
Jamaica Plain, Mass.

TREES OF THE WESTERN PACIFIC REGION. J. Hugo Kraemer. 436 pages, illustrated, indexed. Published by the author, Purdue University, West Lafayette, Ind. 1951. $5.50.

The bulk of the book, 384 pages, is devoted to non-technical "Description of the Trees and their Woods." It includes one hundred seventy-eight species, representing one hundred nineteen genera and fifty families. Typically, each species is discussed under the headings: Local Names, Habit, Leaves, Flowers, Fruit, Bark, Wood, Occurrence. One's first impression is that it is a fully illustrated book, but of the one hundred seventy-eight species, fifteen have no illustrations, and eighteen others also lack illustrations but have, instead, a figure of a similar species not itself treated.

The subject matter, prepared by Dr. J. H. Kraemer, was first printed near the end of World War II by the U. S. Navy, Bureau of Yards and Docks, as two war manuals. With nine exceptions, the new text is assembled directly from the two previous war manuals by cutting and pasting, being identical on most of the pages, even to the half-inked or broken letters (usually, on p. 307) and to misspellings (New Quinea, on p. 206), but such errors are few. In sum, it is a well-illustrated book, in popular language, describing the species and relating the timber value and utilization of a good number of lowland trees of lands in the Western Pacific and the China Seas.

HAROLD ST. JOHN
University of Hawaii
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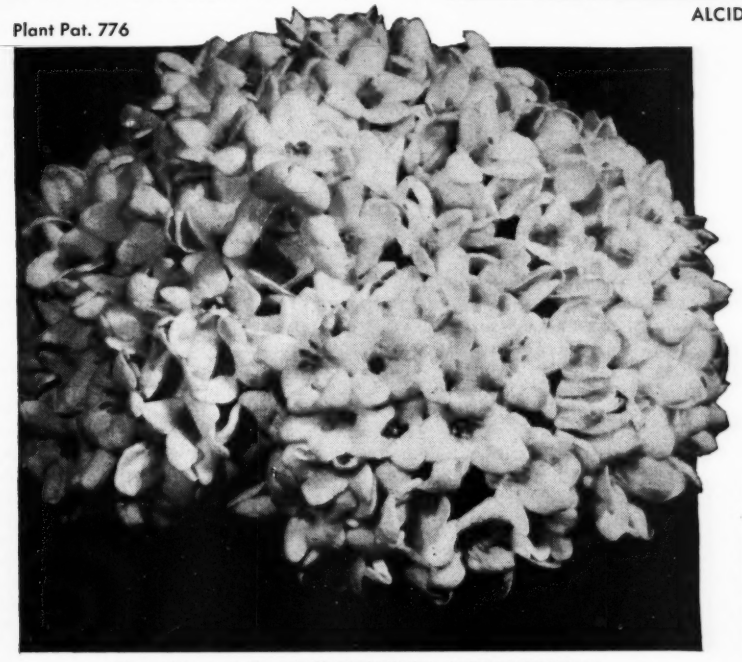

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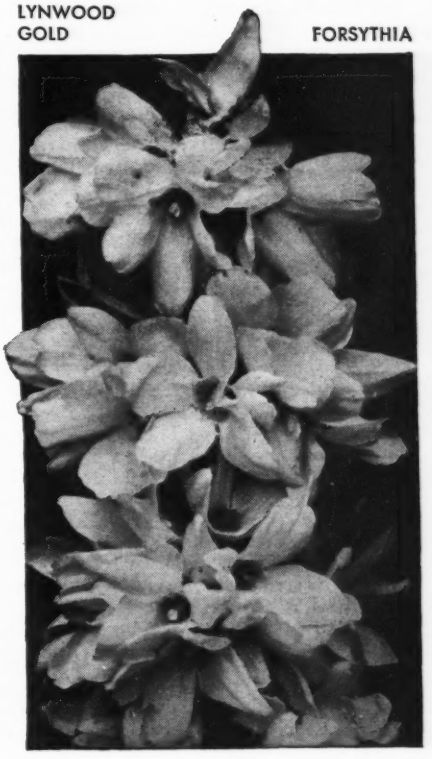

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EXPLORATION OF THE VALLEY OF THE AMAZON. William Lewis Herndon. 201 pages, illustrated with maps and reproductions of contemporary prints; edited and with an introduction by Hamilton Basso. McGraw-Hill, New York. 1952. $3.75.

In February 1851, Lt. William Herndon USN received orders from the Secretary of the Navy to collect information on the headwaters of the Amazon River in Peru and Bolivia, and then to explore the valley of the great river, collecting information on navigation and human and natural resources. Together with Passed Midshipman Lardner Gibbon, Herndon crossed the Peruvian Andes; at Tarma, the two Americans parted company, Herndon proceeding northward, down the Río Huallaga to the Amazon and thence, after several side trips, to Belém. Gibbon went southeastward across the puna into Bolivia and then down the Ríos Mamore and Madeira to the Amazon. The report of the expeditions was submitted to Congress in two parts, and published in 1853-54 as Executive Reports in both Senate and House editions. Because of the impact of the report on the American public of a century ago, the "literary quality" of the Herndon volume, and the general inaccessibility of these documents, Hamilton Basso has rendered a distinct service in bringing part of this forgotten travelogue to life again. Mr. Basso has eliminated the more prosaic scientific data of the original report and contributed helpful footnotes.

While neither Herndon nor Gibbon ventured far from the beaten path, their itinerary brings memories of the earlier botanists —Ruiz and Pavón, Dombey, Martius — and later ones — Spruce, Rusby, Ducke, Tessmann, Klug, Macbride, Krukoff — who used Tarma, Cochabamba, Iquitos, Santarém, Belém, and a host of minor river ports as collecting centers. Herndon and Gibbon both fill somewhat of a lacuna in nineteenth century "Amazoniana" with their detailed accounts of the agriculture and way of life of the people on the main highway of northern South America; "pure" naturalists and explorers generally relate only the exotic aspects of the more obscure byways. While the maps included by Basso in this modern edition are adequate, the four sketches selected by him for inclusion scarcely do justice to the numerous illustrations of high quality and interest in the original volumes. Gibbon's report is dismissed as mostly "pedestrian and poorly written," but is at least of equal interest in the broad scope of modern geography, although apparently not literarily. Perhaps Basso's edition will stimulate the reader to investigate both original volumes.

J. J. WURDACK

NUTTALL'S TRAVELS INTO THE OLD NORTHWEST. Edited by Jeannette E. Graustein. 88 pages, plates 68-79: ½ of volume 14 of Chronica Botanica. Chronica Botanica Co., Waltham, Mass.; Stechert-Hafner, Inc., New York City. 1951. $3.

To those who are familiar with Thomas Nuttall's name as authority for many native plant species, but whose knowledge of the botanist has largely been colored by traditional tales of his eccentricities, the publication of this diary brings a refreshing introduction to the man himself. Dr. Graustein has performed a valuable service in locating and deciphering the long-lost note-book, and in interpreting it by means of authentic identification of its plants and animals, together with clarification of geographical and historical data.

The "old" Northwest brought Nuttall from Philadelphia to the center of present-day North Dakota; and his diary, covering the first half of this journey, with scattered references to other areas visited, contains descriptions of the terrain covered, of newly-encountered plants and animals, of various tribes of Indians with their customs and diseases, and of remains of ancient civilizations. We become acquainted with the man who, though tormented by recurring malaria, continues his self-forgetful way through hardships and dangers, faithfully carrying out his commitments to Dr. Benjamin S. Barton, at whose instance the scientific expedition was undertaken.

Complete documentation, pertinent illustrations and notes, and a biographical sketch, evince the thoroughness of Dr. Graustein's editorial treatment.

HELEN M. GILKEY
Professor of Botany and Curator of Herbarium
Oregon State College

TEXTBOOK OF THEORETICAL BOTANY. R. C. McLean and W. R. Ivimey-Cook. 1,069 pages, illustrated with drawings by Miss K. Benson-Evans, and photographs by the authors. Printed in Great Britain. Longmans, Green, New York. Volume I. 1951. $13.50.

In the preface of the first volume of this series, planned to include three more volumes, the authors admit to the audacity of their endeavor. They propose this elaborate series as a compendium of botanical information, detailed and extensive enough to serve a student as a source book through the years of his undergraduate training. As a consequence the number of pages in the first volume totals 1,069.

This first volume is devoted to a review of classes of plants, grouped into phyla. The taxonomic arrangement is standard, exhibiting no radical departure from systems in common use, an arrangement which for the beginning student is always advantageous. Only the orders of plants for which a particular type is described are included in the discussion. Perhaps it would have been desirable to have included an additional order here and there in the outline of classification, even though the types are not described.

As an introduction to the orders and types of plants described, the authors preface their treatment with a chapter on the cytology of plants and another on the basis of plant classification. Prefatory to the chapters on vascular plants is a chapter on plant histology. To introduce the phylum Spermatophyta is an introductory chapter approaching the subject mainly from an evolutionary point of view. A chapter devoted to the Angiospermae in general precedes the detailed chapters on roots, stems, and leaves of the Angiospermae. (Details of reproduction in the Angiospermae will be treated in the forthcoming volume II.) These introductory interspersed chapters are excellent devices for ensuring the lucid presentation of the material covered in the book. Adding in no small measure to the general clarity and usefulness is the inclusion of a glossary of prefixes and suffixes.

Reading this text one is impressed by the smoothness of its style and is appreciative of the choice of widely selected materials, often quite novel and thought provoking, but he often wishes for less traditional presentation. In some instances, the level of critical knowledge in 1951 far exceeds this presentation. Changes in textbooks notoriously lag behind the research level, but frequently the quality and usefulness of the discussion would be far extended by a little daring. It could not impose much, if any risk, to say, for example: that commercial penicillin is from a strain of *Penicillium chrysogenum*, although *P. notatum* was the species in which the production of the antibiotic was originally recognized and from which it was derived.

Occasionally, in the effort to present a simplified lucid account of a subject, the information has been curtailed to a misleading point.

Finally, one cannot help but imagine the hypothetical student. A bibliography would seem desirable, especially for a long-range reference book. Again from the student's viewpoint, if this volume represents the material to be covered topically in the first course, the student will be led by detailed evolutionary steps, beginning with the algae, to the point of reproduction in the Angiospermae, only to find that topic omitted from the discussion. If the subject of reproduction is to be included in the first year, then the student also will purchase volume

II his first year. In order to gain an over-all picture of the field of botany today, a student actually would need access to all four volumes from the beginning of his study.

Many professional teachers of botany will sympathize with the stated purpose of this series and the implied hope that the students using it will dig into the subject with thoroughness. There is no question but that this first volume of the proposed series is prepared with thoroughness, thought, and originality. Because of these qualities, it is to be hoped that the students who use these volumes will be inspired to the same level of attainment.

GLADYS E. BAKER
Plant Science Department
Vassar College

WILD FLOWERS OF THE CAPE PENINSULA. Mary Maytham Kidd. 94 color plates with text; indexed. Foreword by J. C. Smuts. Oxford University Press, New York. 1950. $13.

South Africa displays the most colorful and popular flowers of the continent. Especially interesting is the flora of the Cape Peninsula. Here many plants grow in easily accessible sites and bear attractive flowers within reach of the amateur botanist. Ornamentals from South Africa have found a place in the warmer gardens of the world, and both they and many uncultivated flowers from that area have been the beauteous subjects of colored illustrations of excellent fidelity and art. The present handbook of original paintings by Mary Maytham Kidd is the most ambitious of those dealing with the Cape flowers.

It comprises ninety-four colored plates illustrating about eight hundred fourteen different species. Over one-third of the Cape species are represented, excluding the grasses and sedge-like plants. The paintings are original and were made from living or fresh material. The arrangement of the plates is according to the months in which the plants depicted can be found in flower (or in fruit, in special instances). Sometimes there are further subdivisions as to habitat or botanical grouping. The illustrations are most often life-sized. The same species sometimes appears twice to show variation. As many as eighteen or as few as three species may be illustrated in a single plate. The latin name and sometimes a synonym, the family, and the vernacular name are given; also short notes on habit, frequency and habitat. The text and nomenclature were compiled under the supervision of T. M. Salter, and thus botanical accuracy can be attested.

There are no floral analyses or botanical descriptions. Identification of a Cape plant by means of this book must rely on general appearances and color, both of which are illustrated in excellent style. Good paintings can often aid in the identification of plants, but even botanical line drawings may fail to distinguish species of very difficult groups. One may well wonder what confidence to place on a specific determination of an *Erica* by such means. There are one hundred two species of heaths in the Cape Flora, many of which can be identified only by technical characters; forty-five of these are illustrated by Mary Maytham Kidd, the differences shown between some being very tenuous.

The FLORA OF THE CAPE PENINSULA, edited by R. S. Adamson and T. M. Salter, was published in the same year as the present work. There are keys and botanical descriptions in the FLORA, but no illustrations. WILD FLOWERS can serve as an illustrated companion to the botanical manual. By itself, it is a guide to those who wish to name plants by the hazardous picture-book method, if proper caution is observed by them. Aside from botany, the illustrations give aesthetic satisfaction as art subjects in themselves, even to one who has no knowledge of the Cape plants and who does not contemplate travel in the peninsula.

JOSEPH MONACHINO

THE HOME GARDEN BOOK OF HERBS AND SPICES. Milo Miloradovich. 236 pages, illustrations, index. Doubleday, Garden City, N. Y. 1952. $2.95.

In this intriguing and informative book on the growing and using of herbs and spices, one may read along pleasantly or browse intermittently among bits of history of those plants, of their place in folk-lore, in sciences and in modern commercial uses. Directions for cultivation, for adaptation to various climates, for window-box growing, and varied household uses are all given in detail.

The hardened herb grower and user may take exception to some statements, which may or may not be matters of taste, opinion, or purely local horticultural practice, as the case may be. It is difficult to disparage the attractive quality of this handy book for the scattered inaccuracies, which should have been corrected in proof.

One hopes that the beginner growing and using herbs will not take every statement as completely final. The impression grows, with reading, that a literary compilation of facts is not always as accurate as first-hand, practical experience. Miss Miloradovich is to be congratulated upon having done a vast amount of research and upon a facile pen which has produced a very pleasant little volume. We are sure it will inspire the home gardener and user of herbs and spices.

ELIZABETH REMSEN VAN BRUNT
Kitchawan, N. Y.

GENES, PLANTS AND PEOPLE. C. D. Darlington and K. Mather. 187 pages, illustrated. Blakiston, Philadelphia, Pa. 1950. $4.

As stated in the Preface, "The present essays are here published in a collected edition to meet the demand for the separate articles of which reprints are no longer available." They cover a wide range of material and seemingly are bound together only by the thin thread of genetical philosophy. In subject matter, they extend from the structure of the chromosome through such diverse subjects as polypoidy, heterothallism in fungi and eugenics, to a critique of Lysenkoism and the purging of classical genetics in Russia.

At first glance, one might wonder at the usefulness of papers on rather special topics being reprinted, a few after the passing of two decades or more. Certainly much has been discovered about polyploidy since 1929. And within the last year, this reviewer has listened to Darlington discuss items on "Chromosome Chemistry and Gene Action," which went beyond those detailed in this chapter, originally published in 1942. On the whole, however, the authors are sufficiently ahead of the generally accepted concepts in their special fields that even after a decade or so, one of their papers still makes for relatively fresh reading. Others of these essays are of sufficiently generalized nature that they take on something of the aura of timelessness and thus, for some years to come, will be timely. The Introduction, first published in 1939, is a brief and lucid statement on the basic philosophy of genetics and, as such, is almost worth the price of the entire volume.

W. H. CAMP
The Academy of Natural Sciences of Philadelphia

PHYSIOLOGY OF THE FUNGI. Virgil Greene Lilly and Horace L. Barnett. 464 pages, illustrated, indexed. McGraw-Hill, New York. 1951. $7.50.

In this introductory text of fungus physiology, Lilly and Barnett have provided a very useful book to meet the needs of a rapidly growing field. The book is concisely written and well covers the various aspects of the subject in such manner that it is easily understandable by the beginning student. The eighteen chapter headings are as follows: Introduction, Culture Media, Growth, Enzymes and Enzyme Action, Essential Metallic Elements, The Essential Nonmetallic Elements Other Than Carbon, Carbon Sources and Carbon Utilization, Hydrogen-ion Concentration, Vitamins and Growth Factors, Fungi As Test Organisms, Metabolic Antagonists, The Action of Fungicides, Metabolic Products, Factors Influencing Sporulation of Fungi, Spore Discharge and Dissemination, Spore Germination, The Physiology of Parasitism and Resistance, Physiological Variation and Inheritance of Physiological Characters.

The book is well illustrated and throughout the entire text the authors have drawn

(Continued on page 196)

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NEWS, NOTES and COMMENTS

Conservatory. As this magazine goes to press, major renovations are progressing rapidly in the Conservatory. The changes contemplate complete rearrangement of path systems to allow for more graphic and effective plant material displays. The Palm House will contain an unique method for observing under-water plants growing in simulated natural conditions. Two houses are being redesigned for the particular purpose of providing suitable areas for the floral shows and exhibits planned for the future.

New North Bridge. This bridge replacing the famous "Boulder Bridge" is practically completed. There remains only the paving of the approaches and of an adjacent parking area to finish this addition to the Garden's many facilities. The new bridge, designed for both vehicular and pedestrian traffic, became necessary not only because of the increased traffic using the Garden's highways, but also because the "Boulder Bridge" was found to be unsafe for continued use and beyond the chance of reasonable repairs.

Lorillard Snuff Mill. Plans for the renovation of the Lorillard Snuff Mill indicate that it will be ready for public enjoyment as a dining facility near the end of April 1953. The river level floor will have a luncheon counter and table seating capacity totaling approximately three hundred. It will open upon an upper terrace with seating arrangements for over eighty persons; the upper terrace will overlook a lower one where about three hundred may be accommodated. The second floor will be renovated to provide rest rooms and a large meeting room for garden clubs and other similar organizations.

Explorations. Again this year extensive explorations in northern Latin America are being undertaken under the leadership of Dr. Bassett Maguire, accompanied by Dr. John Wurdack. This expedition has been made possible through the generosity of H. R. Kunhardt, Chairman of the Expedition Committee, and with materials donated by Sears Roebuck and Johnson Motors.

Theatre Benefit. The Women's Volunteer Committee of The New York Botanical Garden announce that plans have been made for the benefit performance of Terence Ratigan's play "THE DEEP BLUE SEA," produced by Alfred de Liagre and starring Margaret Sullavan, on the night of December 9th at the Morosco Theatre.

Mrs. Richard S. Meredith, Mrs. Charles G. Stradella, and Mrs. Henry Steeger head the Benefit Committee. Other members of the committee are Miss Anna R. Alexandre, Mrs. James C. Brady, Mrs. Richard de Wolfe Brixey, Mrs. Charles Burlingham, Mrs. Samuel R. Campbell, Mrs. H. S. Fenimore Cooper, Mrs. Hiram E. Dewing, Mrs. Robert Dowling, Mrs. Walter B. Eaton, Mrs. Albert Francke, Jr., Mrs. Herbert B. Greeff, Mrs. Norvin H. Green, Mrs. J. Henry Harper, Mrs. William E. Hutton, Mrs. J. Horton Ijams, Mrs. Francis K. Kernan, Mrs. George K. Livermore, Mrs. Francis H. Low, Mrs. James W. Maitland, Mrs. Harold Ruckman Mixsell, Mrs. H. Harvey Pike, Mrs. Charles G. Proffitt, Mrs. Grafton H. Pyne, Mrs. Junius B. Richards, Mrs. Donald B. Straus, Mrs. Thomas D. Thacher, Mrs. Samuel Walker, Mrs. Philip B. Weld and Mrs. John G. Winchester.

Proceeds from the benefit will be used to further scientific research being done at the Garden in the fields of nutrition, abnormal growth and antibiotics. Tickets may be purchased at the Downtown Office of The New York Botanical Garden, 22 East 60th Street, New York 22.

Dr. E. C. Auchter. Dr. E. C. Auchter, who had been a member of the Corporation of The New York Botanical Garden since January 12, 1939, passed away in August. He had served as a member of the Board of Managers from November 1938 to March 1945.

Flower Shows. It is physically impossible to report on all of the many flower shows which are held in late summer and early fall. We can only briefly comment on some that particularly impressed us for one reason or another:

The lively interest not only of those who participated as officials, committee members and exhibitors, but of the entire organization in the ninth annual show of the Royal Liverpool Group, September 8. The good quality of the annuals in the specimen classes, in spite of a miserable growing season, was also commendable.

The initial venture on September 11 of the new garden department of the Fairmount Women's Club of Chatham Township, New Jersey — a creditable show with many fine exhibits in the specimen and potted plant classes as well as in the classes for flower arrangements.

The superbly grown specimens, the result of cultural skill and careful attention, at the thirty-eighth annual exhibition of the American Dahlia Society, with the cooperation of the Horticultural Society of New York, Essex House, New York City, on September 16 and 17. We noted a number of tricolors and special awards. Blooms ranged from tiny pompons to mammoth exhibition, easily eight to ten inches across and several inches through. Why must they be so big? In our humble opinion, they become monstrosities when they reach such huge proportions of flower, stem, and foliage. Garden club members demonstrated how the various types of dahlias can be effectively used in artistic arrangements; the arrangements on the whole were very well done; several, in fact, were outstanding.

The clever titles given to the arrangement classes in the schedule of the 1952 flower show of the Mountain Lakes Garden Club, evidence of imagination on the part of the schedule committee. Club members demonstrated their originality and artistic ability at the show on September 19 and 20; also their horticultural skill, for specimens were well grown and plants for indoor culture were particularly fine and in interesting variety. There were also educational exhibits on methods of propagation, conservation, and birds.

The Suburban Flower Show at Upper Darby, Pa., September 19-23, an ambitious undertaking for amateur gardeners of Philadelphia and the counties of Delaware, Bucks, Chester, and Montgomery, sponsored by the Merchants of 69th Street. In keeping with the theme, "America the Beautiful," the committee on arrangements solicited exhibits from the States, and all but four responded. Governor Dewey of New York sent a bouquet of the rose New Yorker, through Jackson & Perkins. Anthuriums, Vanda orchids, *Spathiphyllum,* and *Strelitzia Reginae* were among the flowers flown from Hawaii through the courtesy of the Governor of Hawaii; and at the request of the Governor of Puerto Rico, the Garden Club of Puerto Rico sent a collection including *Alpinia purpurata, Monstera deliciosa, Phaeomeria rubra* and *speciosa,* and four species of *Hedychium,* all in flower.

The top-quality of the material at the twenty-sixth annual show of the Trevose Horticultural Society on September 19 and 20. Arrangement classes, forty of them, were displayed on the first floor of the Community House. A miniature in a button fascinated us, as did the ingenious use of cucumber, rhododendron leaves, large silver-veined begonia leaf, and a pale green glass block in an arrangement suggesting coolness. Horticultural classes for flowers, fruits, and vegetables filled the lower floor — superbly grown material. Commercial exhibits of gladiolus, dahlias, and African violets were noteworthy, too, and in the exhibit from Pitzonska's Pansy Farm we saw fine specimens of *Veronica holophylla litoralis* and *Hedera Helix compacta.* A branch of the American Begonia Society put up an excellent display of begonias representing thirty-four species and varieties, all keyed to a chart.

The attractive schedule of the first flower show of the Beechcrest Garden Club of Floral Park, New Jersey, was appropriate to the old red school house in which the show was held on September 27. The theme was "School Days," the classes were titled History, Reading, 'Riting, 'Rithmetic, Geography, etc., and even "an apple for the teacher — an arrangement of flowers in an apple to be staged on teacher's desk." The tricolor winner in the geography class, an artistic arrangement depicting tropical America, was one of the best we have seen in any fall show — China and Italy were also well portrayed.

The collection of berried shrubs — the branches so plentifully berried — by Princeton University (James Clark, Superintendent of Grounds), the collection of geraniums by Milton H. Arndt, Hightstown, N. J., and the clean, healthy specimens of roses, dahlias, chrysanthemums, and vegetables at the fall show of the Stony Brook Garden Club in McCarter Theater, Princeton, N. J., on October 1. Fall arrangements in both the traditional and modern manner and attractively displayed plants, jams, and jellies on sale rounded out a very good show.

"Country Days." The community of Clermont, New York, arranged a unique two-day program, the proceeds of which went to Community House, situated on the site of the first public school in New York State, rebuilt in 1834, and dedicated in 1947 as a memorial to those who have served in the wars since 1775. On "Country Days," October 1 and 2, guests visited historic homes, a modern farm and orchard which

has made New York famous for its apples, enjoyed good country food, square dancing, and other events especially planned for their entertainment. Mrs. Hermann G. Place, Chairman of the Advisory Council of The New York Botanical Garden; T. H. Everett, Horticulturist of The New York Botanical Garden; Mrs. Malcolm J. Edgerton of the Garden Club of America; Mrs. Wallace Lydecker of the Federated Garden Clubs of New York State; and Mrs. Frank B. Washburn of the Hudson River Conservation Society are among those who served on the Advisory Committee of "Country Days." Mrs. Washburn also served as Co-Chairman with Mrs. Charles Coe Townsend, Chairman of this event.

"Our Premier Flower Show." The Westchester County Center at White Plains, N. Y., has been the scene of some notable floral exhibitions sponsored in the past by Westchester horticultural societies. This year members of the fifty-three garden clubs in the 9th District of the Federated Garden Clubs of New York State presented a community flower show on October 3, 4, 5. The show, representing phases of suburban life, included horticultural classes, flower arrangements, garden displays, educational exhibits, and a Junior Gardener section. The latter was particularly noteworthy, the young gardeners showing imagination and skill.

The New York Botanical Garden displayed a selection from its contributions to the literature of botany and horticulture during the last fifty years. The exhibit consisted of books, periodicals and pamphlets published by the Garden or its staff. The focal point was the new BRITTON & BROWN ILLUSTRATED FLORA OF THE NORTHEASTERN UNITED STATES AND ADJACENT CANADA, by Dr. H. A. Gleason, Curator Emeritus of the Garden.

Chrysanthemum Exhibitions. "Chrysanthemums in All Their Glory," from tiny pompons to large exhibition decoratives and ball type were seen at the Eighth Annual Chrysanthemum Show at The New York Botanical Garden October 24-26. The North Jersey, Westchester and Long Island Chapters of the National Chrysanthemum Society cooperated in putting on a very fine exhibition. A Japanese Garden, designed and erected by Mr. Ito and Dr. Hatano and sponsored by the Japanese Travel and Information Bureau was one of the interesting features, the "Court of Awards" another. There were one hundred three classes in the horticultural division in which competition was keen; the list of awards was not available at the time of writing. The invitation class and the other classes for artistic arrangement brought out the usual outstanding arrangements for which this show has achieved fame. On Saturday morning, the second day of the show, one hundred school children from New York City met in annual flower arrangement competition featuring chrysanthemums. This is an activity sponsored by the Volunteer Associates of The New York Botanical Garden. On the same afternoon, Joseph E. Cazeneuve of Plainfield, N. J. gave an illustrated lecture on "Culture of Chrysanthemums: Practical Suggestions."

At the fall show of the Horticultural Society of New York, Hotel Essex House, New York City, November 6-8, the public saw for the first time the new and as yet unnamed varieties of chrysanthemums imported from Australia by Miss Helen Totty. These large ball type mums, originated by a well-known Australian breeder, were featured in the extensive display of Totty's, Inc., Madison, N. J. Other noteworthy exhibits at this excellent exhibition were the huge collection of vegetables from the Flagler Mathews estate, Rye, N. Y. (James Jack, Superintendent); the model of the garden used for therapeutical purposes at Northport Veterans' Hospital (E. B. Moddell, Superintendent of Grounds and Gardens); the exhibit of herbs and scented flowers by the American Herb Society; new varieties of African violets from Charles L. Fischer of Atlantic City; and articles made by the blind. The proceeds of the show went to Lighthouse, Inc.

Garden Club of America Symposium

The Garden Club of America is holding an educational Symposium on horticulture and conservation November 19 and 20, 1952. Morning, afternoon and evening sessions will be held at the New York Genealogical and Biographical Society, 122 East 58th Street, New York City. The public is invited and there is no admission charge.

First on the program is Mr. T. H. Everett, well-known horticulturist of The New York Botanical Garden. Other outstanding speakers are Dr. E. E. Pfeiffer, of the Biochemical Research Laboratory; Mr. Charles E. Mohr, Director of the Audubon Center, Greenwich, Conn.; Mrs. Raymond Watts, naturalist at the Morton Arboretum in Illinois; Mrs. Edward Emerson, winner of The Garden Club of America Fenwick medal for flower arrangement; Mr. Horace M. Albright, former director of the National Park Service; Mr. Paul Shepard, of Yale University; Mrs. Recknagel Ireys, of the Brooklyn Botanic Garden; Mr. Bartram Cadbury, Farmington School instructor; and Dr. Robert Cushman Murphy, of the American Museum of Natural History.

Arrangements for the Symposium were made by Mrs. Randolph C. Harrison, of Greenwich, Conn., second vice president of The Garden Club of America, and her committee. Co-sponsors, in addition to The New York Botanical Garden and the organizations represented by the speakers named above, are: the Conservation Foundation, the New York Zoological Society, and the Horticultural Society of New York.

Garden Symposium. Scheduled for the 1953 Garden Symposium at Williamsburg, Va., March 9-11 and March 18-20, are discussions on landscaping, garden prints, flower arrangements, garden photography and special talks on camellias, azaleas and roses. Dr. Edward P. Alexander, Director of Interpretation for Colonial Williamsburg, has announced that the magazine "Flower Grower," Theodore A. Weston, Editor, will co-sponsor the 1953 program.

Historic Garden Week in Virginia. Historic Garden Week in Virginia, April 23-May 2, 1953, will afford an opportunity to visit homes rich in American history and beautiful gardens. Proceeds from Garden Week have enabled the Garden Club of Virginia since 1929 to restore the grounds and gardens at Kenmore, Fredericksburg; garden at Stratford; memorial garden at the Lee Chapel, Lexington; garden at Woodrow Wilson Birthplace, Staunton; grounds at Wilton, Richmond; The Rolfe Property (Smith's Fort Plantation); Bruton Parish Churchyard, Williamsburg; Mary Washington Monument, Fredericksburg; Thomas Jefferson's garden and wall at Monticello; relief to Plymouth, England; Christ Churchyard, Middlesex County; and the churchyard at Fincastle. In the process of restoration are the gardens at Gunston Hall, Lorton; the grounds of the Barter Theatre Players home, Abingdon; and the gardens at the University of Virginia, as designed by Thomas Jefferson.

Handbook on Chrysanthemum Culture. Under the able direction of Elmo Caruthers, Chairman, Lucius R. Bates, and Dr. Ernest L. Scott, the National Chrysanthemum Society has published a very desirable handbook designed to supply cultural material to new members and other amateurs who do not have access to old issues of the Society's quarterly bulletin. It will also be a valuable reference for advanced growers of chrysanthemums.

(Continued on page 196)

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RABBIT STEW

1 rabbit, about 3 lbs., when cleaned, cut in pieces
3 tblsps. fat
1 cup diced fat salt pork
8-10 small onions
½ lb. mushrooms
2 tblsps. butter
1 tsp. salt
a little pepper
2 tblsps. flour
1 clove garlic, crushed
1 glass white wine
1 faggot*
1 tsp. finely chopped parsley

*Faggot. 3-4 sprigs parsley, 1-2 stalks celery, ½ bay leaf, a pinch of dry or one or two sprigs of thyme, tied together in a small bundle.

Put fat in a saucepan and, when hot, add diced pork and cook until golden-brown. Remove from fire and reserve. Add onions to fat in pan and cook until they are brown all over; then remove and set aside with pork dice. Clean mushrooms and saute them in butter until they are soft and their moisture is cooked away; put with diced salt pork and onions. Clean pieces of rabbit, season them with salt and pepper, and cook until brown all over in the fat left from pork and onions. Drain off the fat from pan; add flour and garlic, mix well and cook until the flour is golden-brown. Add wine and enough water to cover meat. Bring to a boil, add faggot, cover pan and cook slowly 25-30 minutes. Add mushrooms, pork dice and onions, and cook 30-40 minutes longer or until meat is tender. Remove faggot and correct seasoning. Serve sprinkled with parsley. Yield approximately 6-8 servings.

ADRIENNE REED

The species of the genus *Thymus* which is familiar to culinary artists in dried or powdered form is *vulgaris*. It is a low growing, to ten inches, perennial, with small leaves and tiny purple flowers. It can be raised from cuttings and seeds; as the seeds of thyme are small, they are more easily sown if mixed with sand. The surface soil should be very fine, watered, and allowed to drain before scattering the mixture of seeds and sand over it. The little seed bed is firmed with a board, then covered with paper or burlap — the latter is preferable as one can spray the seeds lightly through it. Thyme, of course, likes sun and well-drained sandy soil.

Thyme is not only a culinary herb, but oil from the plant is used in deodorants and perfumes, and it is also used in medicines. In the "good old days," a hot infusion of thyme leaves was the remedy given to dispel nightmare.

Speak not — whisper not;
Here blowcth thyme and bargamot;
Softly on the evening hour,
Secret herbs their spices shower.
Dark-spiked rosemary and myrrh,
Lean-stalked, purple lavendar;
Hides within her bosom, too,
All her sorrows, bitter rue.

Walter de la Mare

NEWS, NOTES **(from page 195)**

The contents are diversified and well presented, the subjects ranging from making cuttings, pinching, and disbudding, bloom protection, and exhibiting (this material contributed by members of the Society), to pests and control by Dr. Clyde C. Hamilton and Dr. Spencer H. Davis of Rutgers, and to soil treatment for pest control by Dr. D. C. Kiplinger of Ohio State. The price is fifty cents and the handbook may be obtained from Elmo Caruthers, Elizabeth, N. J.

Poems by Liberty Hyde Bailey. "My Great Oak Tree" and other poems by Liberty Hyde Bailey was issued as a keepsake by the editors of Chronica Botanica for the members of the American Institute of Biological Sciences attending the Cornell University meetings in September. Copies of the keepsake are available, free on request, from Chronica Botanica Co., Waltham, Mass.

Arid Zone Research. In 1951, UNESCO created an advisory committee to study problems relating to arid and semi-arid regions in the Middle East. In that year particular emphasis was placed on hydrology. This year studies are being concentrated on plant ecology, and in 1953 research will be conducted on resources and uses of wind and solar energy in these regions.

Better Topsoil Assures Better Lawn. An informative folder has been issued by Hyper-Humus Company, Newton, N. J., explaining the conversion of raw subsoil into fertile topsoil without purchasing hauled-in soil. The folder may be had on request.

Cut Roses from the Garden can be Stored at Home for Nearly Two Weeks. Many rose lovers will admit that Mother Nature's time schedule doesn't always fit in with their own. Spectacular displays of roses often seem to come too early for the flower show or special event selected for exhibits from the garden.

Experiments have demonstrated that under the right conditions, flowers can be kept for almost two weeks and still compare favorably with fresh cut flowers. Naturally, good results depend primarily on healthy plants. Hardy varieties such as Vogue, Ma Perkins, Fred Howard, Helen Traubel, and Chrysler Imperial, All-America award winners, provide a continuous supply of roses which will stand up well under storage conditions.

The three important factors in storing roses are temperature, moisture, and sugar content. Recent experiments show that cut roses last best at a constant temperature of 31°. In the average home refrigerator, roses should be kept on the first shelf below the freezing unit, where the temperature will be closest to the established mean.

Water is second in importance in storing roses. To prevent transpiration (evaporation of water from the leaves and petals), roses should be packed in containers that are moisture-proof and air-tight. Storing with the stems out of water further slows the plant cycle and keeps the flowers from opening. Plunging the stems into water will speed the opening of the flowers and the dropping of the petals.

Sugar is the third factor in effective rose storage. The greater the quantity of sugar present in the rose when it is cut, the better its lasting qualities. Roses should be cut in the afternoon on a bright day, when the sugar supply has been built to its highest level.

Containers for storing cut roses are easily improvised. Mailing tubes coated with paraffin, cellophane containers, potato chip cans, and deep freeze wrappers are materials that can be used successfully.

When removing the flowers from storage, cut about an inch off the stem ends and place them in warm water to speed up the resumption of normal functions. While the roses are still in warm water, place the container in a cool place for six to eight hours to condition the flowers.

BOOK REVIEW **(from page 193)**

from their own research wherever possible. In addition to the text, there is included a list of suggested laboratory exercises which should be of considerable assistance to those who are initiating a laboratory course in fungus physiology.

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MEDICAL BOTANY. Alexander Nelson. 544 pages, illustrated, indexed. Williams & Wilkins, Baltimore, Md. (Printed in Great Britain.) 1951. $6.50.

The sub-title to this interesting book describes it as "A hand-book for medical men and all who are concerned in the use of plants: nutritionists, dieticians, pharmacists and veterinarians," and it certainly lives up to its claims. It is encyclopaedic in its presentation of a tremendous number of facts and its greatest usefulness will be as a reference or textbook. It contains so much "meat" that it is not easy reading, although it is remarkable that Dr. Nelson has been able to present his material in the interesting manner he has.

The greater portion of the book is taken up with the study of foods of vegetable origin. There are chapters on the botanical structure in relation to the content of the main food classes; mineral and ash constituents; vitamins; the effects of various kinds of storage, processing and cooking on the food values; the characteristics of different classes such as cereals, leafy vegetables and fruits.

Toward the end of the book there are excellent chapters on vegetable drugs, poisons, and stimulants long known in our older pharmacopoeias, as well as interesting details about our newer antibiotics from fungi such as penicillin, streptomycin, and aureomycin.

The book is an important compilation of facts and should be of the greatest value to those interested in the subjects covered.

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THE BIRDS ARE YOURS. Robert S. Lemmon. 12[illegible] pages, illustrations by Don Eckelberry. Macmillan, New York. 1951. $2.25.

Young and old who are bird lovers will enjoy this interesting little book which relates less familiar incidents on bird life. It is well written by Mr. Lemmon and attractively illustrated by Mr. Eckelberry—both of them naturalists keenly interested in birds which they have closely observed, as the books bears witness.

Publications of THE NEW YORK BOTANICAL GARDEN

Books, Booklets, and Special Numbers of the Journal

Flora of the Prairies, and Plains of Central North America, by P. A. Rydberg. 969 pages and 601 figures. 1932. $6.

Plants of the Vicinity of New York, by H. A. Gleason. 284 pages, illustrated. A handbook especially compiled for the beginner. 1935. Second edition 1947. $2.

The Bahama Flora, by Nathaniel Lord Britton and Charles Frederick Millspaugh. 695 pages. Descriptions of the spermatophytes, pteridophytes, bryophytes, and thallophytes of the Bahamas, with keys, notes on explorations and collections, bibliography, and index. 1920. $6.25.

North American Cariceae, by Kenneth K. Mackenzie, containing 539 plates of *Carex and* related plants by Harry C. Creutzburg, with a description of each species. Indexed. 1940. Two volumes, 10¾ x 13½ inches; bound $17.50. Foreign postage extra.

Keys to the North American Species of Carex, by K. K. Mackenzie. From Vol. 19, Part 1, of *North American Flora.* $1.25.

Plants of the Holy Scriptures, by Eleanor King, with a check-list of plants that are mentioned in the Bible, each one accompanied by a quotation. Revised from the Journal of March 1941. 23 pages, illustrated. 1948. 25 cents.

Food and Drug Plants of the North American Indian. Two illustrated articles by Marian A. & G. L. Wittrock in the Journal for March 1942. 25 cents.

Vegetables and Fruits for the Home Garden. Four authoritative articles reprinted from the Journal, 21 pages, illustrated. Edited by Carol H. Woodward. 1941. 25 cents.

The Flora of the Unicorn Tapestries, by E. J. Alexander and Carol H. Woodward. 28 pages, illustrated with photographs and drawings; bound with paper. 1941. Second Edition 1947. Third Edition 1950. 25 cents.

Catalog of Hardy Trees and Shrubs. A list of the woody plants being grown outdoors at The New York Botanical Garden in 1942, in 127 pages with notes, a map, and 20 illustrations. 75 cents.

Succulent Plants of New and Old World Deserts, by E. J. Alexander. 64 pages, indexed. 350 species treated, 100 illustrated. Bound in paper. 1942. Second edition 1944. Third edition 1950. 50 cents.

Review of Juniperus chinensis, et al, by P. J. van Melle. A study of the many varieties and forms of *Juniperus* which have been commonly included in the concept of *J. chinensis.* 108 pages, illustrated, bound in paper. 1947. $2.

Periodicals

The Garden Journal of The New York Botanical Garden, bimonthly, designed to stimulate interest in the world of plants and the science of plant life, contains non-technical article on botanical, horticultural and kindred subjects; also special departments — book reviews, questions and answers, news and comments. $2.00 a year, 35c single copy. Foreign subscription $2.50 a year.

Mycologia, bimonthly, illustrated in color and otherwise; devoted to fungi, including lichens, containing technical articles and news and notes of general interest. $7 a year; single copies $1.50 each. Now in its forty-third volume.

Brittonia. A series of botanical papers published in cooperation with the American Society of Plant Taxonomists. Subscription price of volumes 1 through 5, $5 a volume ($4 to members of the Society). Now in its seventh volume. Price, $7.50 ($5 to members of the Society).

North American Flora. Descriptions of the wild plants of North America, including Greenland, the West Indies, and Central America. 100 parts now issued. Not offered in exchange. Prices of the separate parts on request.

Contributions from The New York Botanical Garden. A series of technical papers reprinted from journals other than the above, 1899-1933. 25 cents each, $5 a volume. List of separate titles on request.

Memoirs of The New York Botanical Garden. A collection of scientific papers, issued irregularly. 1900——. Vols. 1-6, to members of the Garden, $1.50 a volume; to others, $3.00. Vol. 7, to members, $2.50; to others, $5.00. Vol. 8, $10.00.

NOTE: The price per copy of back numbers of the Journal is 25¢; of back numbers (more than one year old) of The Garden Journal, 45¢

All orders and inquiries should be addressed to

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